The Manitoba Medical Review

Vol. 35 OCTOBER, 1955 No. 8

Medicine

The Importance of Rehabilitation in Medical Practice Today

T. E. Hunt, M.D., F.R.C.P.(C)

Director of Rehabilitation Medicine, University Hospital, Saskatoon, Sask.

In perhaps no other field of medicine are the problems of treatment and rehabilitation so closely bound together as they are in the rheumatic diseases. One indeed finds it exceedingly difficult to think, even erroneously, of the two phases of management being separated, for surely in this group of diseases the one cannot be accomplished without the other. Any programme for the care of arthritis patients would, therefore, be incomplete without adequate facilities for their rehabilitation. If we wish to manage our rheumatic problem adequately, then, a knowledge of the philosophy and techniques of rehabilitation medicine would seem essential. I have, consequently, chosen to speak to you this evening, on the broad topic of: "The Importance of Rehabilitation in Medical Practice Today," and, at the conclusion, will make specific reference to the general management of chronic arthritis.

First of all, then, what is Medical Rehabilitation? In its broadest sense medical rehabilitation means total care of all patients coming under our care from their initial visits until they are gainfully returned to their own homes and communities. The chief aim of rehabilitation, therefore, is full restoration of health and living following any illness or injury and a physician's duties are not fully discharged until such has been accomplished. This, you will agree, is good medical practice, and has been carried out by many physicians for many years. For example, the child who has had an appendectomy is usually seen several weeks after his discharge from hospital, and if everything is progressing satisfactorily, the parents are advised that he may go back to school and continue gradually into play activities. Similarly, we have follow-up care of the post-partum woman until she, too, is back caring for her home and family.

The problem of the care of those suffering from chronic incurable disease or irreparable injury, however, has not been so easily or well handled. This is because of our lack of time, lack of knowledge and, I'm afraid we must admit, possibly lack of interest. It is in this realm that medical rehabilitation has made so much progress recently. That is, rehabilitation, in its narrower sense, has become concerned with the restoration of persons suffering from the various forms of chronic disabilities. We can, therefore, accept the definition of rehabilitation as "the restoration of the disabled to the fullest physical, mental, social, vocational and economic usefulness of which they are capable." Any person is entitled to rehabilitation who is prevented, by reason of a disability, from realizing the fullest type of life and usefulness of which he or she could be capable.

You can see then, that rehabilitation is not really a separate specialty or technique which must be suffered by medicine, but a part and parcel of the whole field of medical practice and assumes equal importance with the other more senior phases of management, namely, prevention, diagnosis and treatment. It is my sincere hope that each practitioner in this province will become rehabilitation conscious and handle a large number of his acute and chronically disabled patients in his and their own comunity.

Rehabilitation is not, however, something to be considered after all other measures fail, but rather must be actively commenced upon a patient's first visit to the office, or, in the general hospitals, as soon as the acute effects of illness and injury have been controlled. It has been adequately proven that where such practices prevail, there is much wastage of manpower, economic resources, and hospital beds.

Certain patients, however — particularly those with severe chronic disabilities — do require more extensive services and facilities than are available from the average practitioner and community. Hence it is necessary that, in certain areas, special rehabilitation centres be set up to carry out restorations of such individuals. Rehabilitation centres, therefore, are especially designated areas where specially trained personnel may be brought together to work as a team in planning and establishing programmes for the restoration of severely disabled patients. Such an area might be the basement or wing of a large central general hospital, a specially constructed building for the purpose, or merely a revamped factory or warehouse. The personnel at the centre will be drawn from those services which are concerned with the physical, mental, social, vocational and economic restoration of patients. Included are specialists in physical medicine and rehabilitation, and, at times, practically all the specialties of medicine may be needed, as well as psychologists, physical and occupational therapists, remedial gymnasts,

Read before the Winnipeg Medical Society on March 18, 1955.

speech therapists, nurses, social workers, brace and limb makers, school teachers and instructors, vocational counsellors, and job placement officers.

At the rehabilitation centre, the patients' disabilities and abilities are evaluated, and if rehabilitation is considered feasible by all concerned, including the patients themselves, then rehabilitation programmes are begun, sometimes utilizing the services of all the types of personnel which have been enumerated. However, and this point must be remembered, rehabilitation is actually a medical problem, and although such a group must work as a team, the team must have as its captain a member of the medical profession who will see that the patient's ultimate well being is always kept in mind by all concerned.

Equally important, and this has been pointed out by Dr. Strong[1], the president of our own C.M.A., is the fact that the profession be prepared and equipped to provide this direction and leadership—not only in the rehabilitation centres but in the community as well. And this brings me to the second point of my text, viz., The Importance of Rehabilitation, particularly to us — the doctors.

The importance of our leadership has already been emphasized. Perhaps, to be better qualified for this leadership, we might look for a brief moment at the problem created by disability in our communities and the need for something to be done in the way of rehabilitation.

I have been told by a number of "good" doctors, that, in their practice they find they have no great concern over chronic diseases, arthritis and old age! (It is difficult at such times not to start trying to approximate the length of the "good" doctor's neck or ascertain where he has his head buried!) Such statements do not corroborate facts which have been personally observed, or observed by the majority of practitioners, or have been estimated by health surveys. I am not a statistician, nor do I propose to bore you with unnecessary statistics at this point. However, let us turn for a moment to the Canada Sickness Survey of 1951[5]. From this reputable source we find that Canadians spend over a billion dollars yearly on their national health and a good portion of this goes to the care of the chronically disabled. There are over one million handicapped or disabled persons in Canada and nearly half of these have a severe and permanent disability. Three percent (3%) of our total working population (16-60 years of age) are so disabled that to date, they have not been capable of employment, and 2 out of every 100 persons in the country have to be supported physically and/or economically by their families or the public. In Saskatchewan, we can safely estimate that there are around 15,000 persons who cannot support themselves—or a city almost the size of Prince Albert composed entirely of the crippled and disabled of our own province.

Thus, the magnitude of the problem!

Rehabilitation is necessary, and it is up to the medical profession to lead the way.

Acceptance of leadership, however, is only half of our duty; how can we prepare and equip ourselves for such leadership? What can we do to foster rehabilitation in medical practice—the third point of our "text."

Some steps to meet this need have already been undertaken: that is to increase the teaching of the subject to undergraduate and postgraduate students in our medical schools and teaching hospitals. Professorial chairs in Physical Medicine and Rehabilitation are being created in universities in increasing numbers. More and more men, although still too few, are becoming interested in rehabilitation as a specialty, and it is hoped that there soon will be sufficient to provide at least an elementary consultative service in most large centres. The development of such consultative facilities is another step which is being taken to assist us all in improving our rehabilitation facilities.

Postgraduate courses for all types of practitioners and nurses, is another facet which should be explored, and, you will be happy to know, we are planning a short course on rehabilitation at the University of Saskatchewan, to take place later in the year.

Travelling teams from rehabilitation centres and universities visiting smaller centres, are also a suggestion. A team could spend several days in one town seeing patients during the day and discussing the problems with the local doctors during noon hour and evening sessions.

These are some suggestions of a long range programme for increasing rehabilitation services in medical practice. What can be done today, with the facilities which we have available, be they comprehensive or the simple things available in a small community?

First of all, I would commend your interest and enthusiasm. Dr. Strong has said that rehabilitation is the greatest challenge facing medicine today. It is, therefore, worth our while to study the philosophy and the techniques of the field with the idea that we can, in our practices, put some of the procedures to work here and now. Valuable references, for practitioners, are the works of Krusen[2], Kessler[3], and Edith Buckwald[4]. Again almost every other journal, lately has contained some type of article on rehabilitation.

Secondly, one should not be afraid of trying to commence a rehabilitation programme. So much of rehabilitation is just common sense, plus a little bit of ingenuity. For example, if a patient cannot sit up in bed by himself, due to weakness, a hinged plywood board under his mattress fastened to a spring or counter-balance weight, plus a suitable unlocking device, will do the trick.

You don't need fancy equipment—and, in fact, in many successful rehabilitation programmes, most therapeutic and assistive devices are simple and made by a local handyman.

Thirdly, how can a disability problem be simply evaluated and a simple restoration programme commenced?

After establishing a diagnosis in a disability case, we want to know what he can do, what he can't do, why can't he, and what makes this particular disease a disability in this particular person. A disease becomes a disability when it produces a loss of living function—that is, when a person cannot continue with his normal activities of daily living and/or work. If we assess these two factors then, we have come a long way in evaluating the patient's abilities and disabilities. Such an evaluation, together with our physical examination, which will include range of motion of joints, muscle testing, observation of gait difficulties, and emotional assessment, will give us a good idea of where the problem lies and where our work begins.

Now activities of daily living are just those little things which we healthy people do every day of our lives easily and without thought—but which the disabled cannot do — such as, getting up out of bed, shaving, washing, going to the toilet, walking, etc.

Comprehensive assessments of daily living activities have been devised but a simple one is just to ascertain whether a patient can: sit up in bed, look after own hygiene, feed himself, get dressed, walk with or without crutches, get about in a wheel chair, get out of bed to a chair or the standing position and vice versa, go to the toilet and look after clothing at the toilet, and also do such things as turn a page in a book, write a letter and send it off, open and read a letter, work the radio and telephone, and get in and out of the car. If the patient is deficient in any of these, ascertain why: Due to weakness? Stiffness? Pain? Mental deficiency? Loss of a part?

Similarly comprehensive work assessments have been drawn up, but for the majority of cases a few simple enquiries may show us the problem and their answers. I like to know mainly, the following: Can the patient get to work? Look after nutrition and hygiene at work? Get about in place of employment? Sit at a desk for several hours at a stretch? Stand at a counter or table or filing cabinet? Has he full or partial use of hands? Can he lift heavy weights? Can a housewife do housecleaning? Prepare and cook meals? Launder? And/or look after the children? These few details, plus the knowledge of why they cannot be accomplished are of invaluable help. We should also note whether there are restrictions in type of work—such as atmospheric, climbing, use of moving machinery.

Now, once we've seen the extent of the problem and the extent of the remaining abilities we can decide if rehabilitation is possible and commence the patient's programme.

The most important initial step in the programme is to obtain the patient's entire willingness to co-operate. Rehabilitation is an active process in which the patient works as hard as anyone else, and he or she must be ready to accept this responsibility and not just lie in bed expecting a wonderful passive miracle to occur. This is why an emotional and family background assessment is so important and why the family doctor may assume such an important role in deciding the feasibility of, and commencement of, a rehabilitation programme.

The next step is to minimize the disability and build up the remaining functions by adequate definitive therapy and by commencing some form of physical programme.

What does this mean for an arthritis patient?

Well, first of all, we can establish a basic programme of balanced rest and activity, a good diet, salicylates and physiotherapy. Any faults in the patient's general health should also be treated. The physiotherapy may be fairly comprehensive and carried out in a physical medicine department of a large hospital. On the other hand, simple forms of heat and graded exercises are frequently all that are necessary. The exercises serve a two-fold purpose, namely, prevention and/or correction of deformities and relief of pain by increasing blood-flow and by providing better support for moving parts. I personally believe that the latter is extremely important and all of us who have had experience with the management of rheumatic disorders will agree that those patients who faithfully carry out their exercises are those who progress most satisfactorily. It is beyond the scope of such a paper as this to describe sets of exercises for you. However, several points should be stressed. Firstly, these exercises should be initially non-weight bearing. Secondly, they should be aimed at improving muscle power and range of motion by maximum voluntary contraction and, if possible, against resistance. Suitable exercise apparatus may be improvised in a patient's home with pulleys, slings, and clothes-line rope, using doorways, or make-shift Balkan Frames over the bed.

Some form of occupational therapy is also very desirable. Most of us, heretofore, have been rather of the opinion that occupational therapy is just a diversion to help long-term patients idle away the hours. Such a concept could not be further from the truth. The chief purpose of these treatments is to restore function. Such is accomplished for arthritis by prescribing an occupational activity which will promote an increase in range

of motion of joints, tolerance to activity, and strength in muscles. Pottery, plasticine, and clay modelling are excellent for finger activities, sawing, or hammering — good for grosser arm movements, as is weaving, which may also be arranged for overhead and back movements. A bicycle, jig-saw or sander provide excellent leg development if available in a hospital setup. In the home, standing and crouching activities can accomplish a similar purpose.

After this basic programme has been established and progress noted, one can then turn to more specific therapies such as cortisone, phenylbutazone, gold, orthopaedic correction of deformities and, if indicated, more extensive surgery. These should always be considered as adjunct forms of treatment and at no time should they be substituted for or in lieu of the basic programme outlined above.

Once the disabilities have been minimized as much as possible by such a course of management, we must then try to develop as self-sufficient and useful an individual as possible within the scope imposed by the remaining defects. This can be accomplished by increasing function in uninvolved extremities—again by the appropriate physical and occupational techniques and by special training and instruction in the use of supports, appliances, devices, and in activities of daily living.

This, too, is a whole field in itself and one could discuss such features for many hours. Let me just outline, at this time, a few general principles and measurements which may be used.

First of all, the height of the patient's bed should be adjusted for his own needs to facilitate his getting in and out. An arthritic with limitation of flexion in the knees and hips, and weakness of the associated muscles, who can walk once he is standing, will need to have a high bed from which he can stretch down to the floor. On the other hand, a person who is going to be confined to a wheel chair because of severe permanent flexion deformities and/or pain, will need a low bed from which access to the wheel chair may be gained by a direct slide off the bed to the seat of the chair. The same principle should be used in adjusting heights of chairs and toilets for each type of patient.

In sitting up in bed, and in getting out of bed, some sort of overhead bar device is very useful as is a short bar at the side of the upper part of the bed at the level of the mattress. I have already mentioned another useful method of helping patients with weakness obtain a sitting position.

Wheel chairs should be of the light weight, collapsible variety. They should all be equipped with brakes and some may need removable arm pieces. If the hands are somewhat weak, attaching electric tape around the propelling rim of the large wheels will allow increased manipulation, and, in severe cases, one can attach knobs of wood at regular intervals around the rim which can be caught by the patient's wrist or a forearm splint. Foot pedestals and foot rests may be necessary.

Crutches may be of many types and one should try to ascertain which is best for each individual patient. Those individuals who have a lot of involvement of hands, wrists and elbows, may be provided with a special forearm-platform crutch so that the weight is taken off these joints to a considerable extent.

In order to help the patient with feeding, dressing, and caring for himself, some special self-help devices may be necessary. For example, if the grip is weak or too painful upon complete closure of the fingers over an eating utensil, a larger–round, wooden or padded handle can be made. If severe weakness or deformity prevents use of fingers entirely, a light weight wrist or hand splint, incorporating a device to hold a knife, spoon or fork can be made and strapped onto the forearm, wrist and/or hand. Similarly, if a person has difficulty getting food into the mouth because of limitation of elbow movement, elongation of the handles of the utensils or joining a fork and spoon together at an angle may be most useful.

For dressing, loose slip-on garments are most practical. Zippers with rings attached should be used wherever possible if the hands are badly involved, or large buttons, or thong-sticks. Ready made ties should be encouraged. If a man has difficulty flexing his back, hips or knees, he can be taught to pull his trousers on by the suspenders instead of our more usual method of grasping the waist-band. Patients with stiffness in the hips or knees frequently have difficulty getting their shoes on. A two foot rod with a hook at one end and an ordinary shoe-horn attached to the other is a most useful aid for such persons. With the hook and an old-fashioned boot-strap, the shoes can be partially pulled on with the leg extended, then the shoe-horn end can be used to complete the process. Elastic shoelaces or zippers can be used in such a situation to fasten the shoes or boots, or a slip-on type of footwear could be procured. If socks and stockings are found to be troublesome to manipulate, suspenders or pins on the end of strings can be used to pull the hose over the toes and feet and up the legs.

One should give some thought, too, to the physical arrangements in the disabled arthritics home: Such as one-level living, ramps up to at least one of the outside doors if the patient is confined to a wheel chair. Doors should be wide enough for patients with crutches or walkers, and, if necessary, wheel chairs—this is particularly true of the bathroom door. Rooms, again especially the bathroom, should allow fairly easy manoeuvreability for wheel chairs. Shelves in cupboards

should be easily reached, and beds, chairs, bath and toilet seats should be adjusted to suit the individual's disabilities.

If the arthritis patient, on such a programme has reached a stage of self-sufficiency, some type of job might now be contemplated, within the tolerance of the individual's abilities and residual handicap. Through the help of vocational counsellors, and other agencies, a suitable type of employment can be found for a large number of handicapped persons. If training in a particular trade or profession is advisable such can be arranged and financed through Dominion-Provincial funds made available by the new Schedule "R". Most disabled persons respond well to such vocational assistance and job placement is frequently very satisfactory, for the reason that the handicapped person knows he has to do his very best to compete with his whole colleagues. It has actually been experienced that disabled workers perform equally as well as other workers and have fewer absenteeisms, provided they are placed in a job that they know and can do thoroughly. Many other arthritics, who cannot compete, due to their disabilities, on the open labour market, can be found useful employment in sheltered workshops or in the home—thus aiding somewhat in their financial problems and giving a tremendous boost to their self-esteem by the realization that they, too, are contributing to our society in a useful way once again.

In this paper tonight, I have tried to re-emphasize the importance and usefulness of rehabilitation, the third phase of medical practice. Some suggestions for increasing our professional interest and knowledge in the necessary techniques have been made, and a few example principles have been described for guidance in the treatment and rehabilitation of arthritis patients.

The management of chronic disease and injury —of which the arthritides are a good example—is not easy, and is time consuming. Results are rarely of a dramatic nature. Yet, with every indication that such conditions will become more and more prominent in medical practice, we must, of necessity, develop greater and greater interest in these problems, and develop better techniques for their total care. By so doing, we shall have that greater satisfaction of knowing that our duties, as physicians, have been fully discharged, through aiming at full restoration and living for all our patients.

References

1. Strong, G. F.: C.M.A.J., 72: 247-252, 1955.
2. Krusen, F. H.: Physical Medicine and Rehabilitation for the Clinician, Saunders, 1952.
3. Kessler, H. H.: Principles and Practice of Rehabilitation, Lea & Febiger, 1950.
4. Buckwald, Edith: Physical Rehabilitation for Daily Living, McGraw-Hill, 1952.
5. Canada Sickness Survey, 1950-51: No. 6, Permanent Physical Disabilities. Queen's Printer and Controller, Ottawa, 1955.

The Role of the General Practitioner in Rehabilitation

J. G. Pincock, M.D.*

During the past few years a new word has gradually come to the fore in medical literature and in organized medicine. Everywhere we go we are asked to be "rehabilitation conscious". To the average practitioner this leads to a rather confused state of mind and he is torn between the concern that perhaps his patients are going to be removed from his care by some government agency, some new fangled specialist or even the local Rotary Club; or perhaps, that he is again going to be required to learn a new discipline, a new specialty, with all the required study involved, which in his busy life, seems to be a never-ending problem.

What does "rehabilitation" mean? Webster's dictionary defines the word rehabilitate: "To restore to a former capacity . . . efficiency; to fit to make one's livelihood again". Since these concepts are simply a paraphrase of the fundamental concepts of medicine, it would seem that they are of vital concern to the practising physician. Where, then, does the physician fit into a scheme of rehabilitation, and where does his role and responsibility begin, and cease? These questions, I am sure, must be on the lips of every conscientious practitioner who has presently caught up with news reports of rehabilitation conferences, government rehabilitation sources, coordinative rehabilitation services, and so on, ad infinitum.

Let us first state that rehabilitation, in its broad sense, depends entirely upon the maintenance of a concept of the total person. Just as in restoring a patient to health it is necessary to consider not only his physical, but his social and emotional capacities, so in the field of rehabilitation it is essential to realize that the patient is not simply a physical automaton, but is a person with hopes, ambitions, fears, responsibilities and concerns, who has been completely dislocated from his usual niche in society. The job of rehabilitation then, is to restore the person to that niche, or failing that, to another niche in which he can again be secure.

For practical purposes rehabilitation is usually broken down into four broad classifications:

(1) Medical or physical restoration.
(2) Social adjustment or social rehabilitation.

*Director of Assessment and Rehabilitation Unit and Head of Department of Physical Medicine, Deer Lodge Hospital.

(3) Economic rehabilitation, including job placement in training.

(4) Psychological adjustment.

Up to the present most efforts in rehabilitation have tended to emphasize one or other of these various divisions and consequently have ignored, or at least underrated some of the others; for example, job placement efforts have sometimes been made without taking into account the physical capacities of the individual and have resulted in failure; whereas on the other hand, physical restoration methods have been pursued in a patient with such poor social and psychological adjustments, that upon discharge from hospital he becomes completely inadequate, even in a physical sphere.

In order to obviate this rather helter-skelter and untenable method of implementing the rehabilitation concept, the team method has been developed where representatives of each of the various divisions work in harmony under the directorship of one member of the team, so that all the rehabilitation factors are integrated and coordinated to produce the desired result—a well-adjusted, totally rehabilitated individual. In many centres the leadership of this team has devolved around the social worker. This has resulted often in an over-emphasis of the social factors and a minimizing of the medical aspect of the problem. More recently, an awakened and enlightened medical profession has been clamoring for a larger say in the team rehabilitation project. When one considers the background from which the doctor comes, it seems logical that he is the most fitted of all, both by his training and experience, to assume the leadership of the rehabilitation team. This requires, however, that the physician recognize immediately that he cannot, as in the past, hide behind the purely physical concept of restoration, but must broaden his outlook so as to approach his problem with something more akin to humanity and the sanctity of the individual.

Simply because the physician should assume this leadership does not mean that he is required to do all the social casework or to spend hours in fruitless discussions as to the number of bathrooms in a particular establishment. He must, rather, stimulate and integrate the activities of qualified people in the other fields of endeavor to rise above their own local and personal interests, in order that the fundamental good of the individual should be realized. Most important to this is the positive concept of independence as the right and privilege of each individual, which concept has kept medicine on the relatively high ethical plain which it has maintained through the centuries.

From a practical viewpoint then, the role of the general practitioner is that of guide, counsellor and friend, whose concern is for the individual patient and who, by his peculiar talents and knowledge can direct and integrate the available facilities both from local agencies, government, hospital wards and economic assistance programs, and develop an overall plan for the individual concerned. There is a real place for the specialist in this field, but he does not, and never can, displace the grass-roots level of the personal contact of patient and physician. Accordingly, it is to be hoped that the general practitioners of this province will avail themselves of the opportunity to provide for their patients better care with the newly developing and unfolding schemes of rehabilitation services, by utilizing these to supplement their own relationship with their patient. The program will fail in its aim if the practitioner tends to turn over the patient to such services and become simply a disinterested bystander. Presently in the planning which is going ahead, this concept is being maintained and the opportunity which is available is a challenge to organized medicine, but more specifically, to the individual physician. If he fails to accept this challenge, it will lead to his ultimate and final rejection as an ethical, competent, professional man.

Such, then, is the role of the general practitioner in the field of rehabilitation. Such is his responsibility both to the patient and to the community at large. Only as he will accept this responsibility can the final answer be written in medical leadership, showing the way to all the other disciplines so that medicine can retain its rightful place as the leader in the field of health and welfare.

Surgery

Recent Advances in the Surgery of Congenital Heart Disease

Morley Cohen, M.D., Ph.D.
Instructor, Department of Surgery
University of Minnesota Medical School
Minneapolis 14, Minnesota

Congenital heart disease, long regarded as a pathologist's curio, is in reality not as uncommon an affliction as the older literature would indicate. Autopsy material, although seldom giving a complete picture, indicates an incidence of approximately 1:300.[1,2] A statewide survey[3] carried out in Colorado has indicated an incidence of 15.2 cases per thousand preschool children, and 2.7 cases per thousand sixth grade children. On the basis of there being three and one-half million live births annually in the United States, there will be some thirty to fifty thousand children with congenital heart disease born yearly. This incidence, combined with a substantial backlog of individuals who have survived beyond infancy, but are nevertheless handicapped, gives some indication of the relative magnitude of the problem today. Perhaps what is more significant however is the tremendous attrition of these infants unless some measures are taken to interrupt the course of their disease. On the basis of available figures some 50% of these children will die of their disease before the age of 2.

The etiology of congenital heart disease remains unknown. Aside from the now well-documented association of maternal Rubella in the first trimester with some cases of patent ductus arteriosus, there is no established etiology in the vast majority of cases. Experimentally the work of Warkany,[4] Sobin[5] and others utilizing rats suggests that application of certain stimuli (irradiation, dietary deficiency, etc.) at critical periods of gestation may induce significant increases over control colonies in the litter incidence of such forms of congenital heart disease as interventricular septal defect. Admittedly, it is rather doubtful if these factors are ordinarily operative in most human cases.

The management of most cases of congenital heart disease is primarily operative. This is an area of surgery which is as vigorous as its youth for it is only a decade and a half since Robert Gross[6] successfully treated a case of patent ductus arteriosus. Again in 1944 Gross[7] in Boston and and Crafoord[8] in Stockholm each independently successfully resected a case of aortic coarction. In the following year Blalock and Taussig[9] demonstrated the marked improvement which could be obtained in many cases of Fallot's Tetralogy following a subclavian pulmonary artery anastomosis. These brilliant contributions, as well as bringing relief to thousands of individuals whose future had previously been hopeless, served to stimulate a wide embracing interest in the minds of pediatricians, cardiologists, surgeons and physiologists the world over. As a tribute to this combined effort a defect such as uncomplicated patent ductus arteriosus now is considered completely curable with a surgical mortality approaching that of appendicitis in skilled hands.

Until more recently the surgery of congenital heart disease has been directed primarily at those aforementioned lesions related to the great vessels near the heart. The advent of cardiac catheterization and its increased application has made possible the more accurate detection, localization and evaluation of a host of other defects such as interatrial and interventricular septal defects, atrioventricularis communis, anomalous pulmonary venous return, pulmonary stenosis, etc. However the problems entailed in the treatment of this latter group are considerably more complex. Lesions such as septal defects are located inside the pumping chambers of the heart, and in close relationship to important valve structures, and consequently require meticulous, accurate repair. In order to achieve this with any degree of precision it is necessary to interrupt the circulation, open the heart, and under direct vision carry out the required surgery. Although attempts have been made to close septal defects by indirect or "blind" techniques,[10, 11, 12] a high operative mortality particularly with reference to ventricular septal defects, as well as failure to achieve closure as evidenced by postoperative follow-up studies, confirms the necessity of operating under direct vision.

The first milestone in open cardiac surgery was achieved in September, 1952 when Lewis[13] and associates applying principles outlined by Bigelow,[14] successfully repaired an interatrial defect in a child utilizing the technique of hypothermia. By lowering body temperature to levels of 26-28°C., it became possible to interrupt the circulation for periods of 8 to 10 minutes. In this interval the auricle was opened and the suture repair of the septal defect carried out under direct vision in a dry field. This technique has now been applied with clinical success in 30 out of 34 cases[15] at this institution.

An abridgement of this paper was presented at the Sectional Meeting, American College of Surgeons, April 25-26, 1955, Winnipeg.

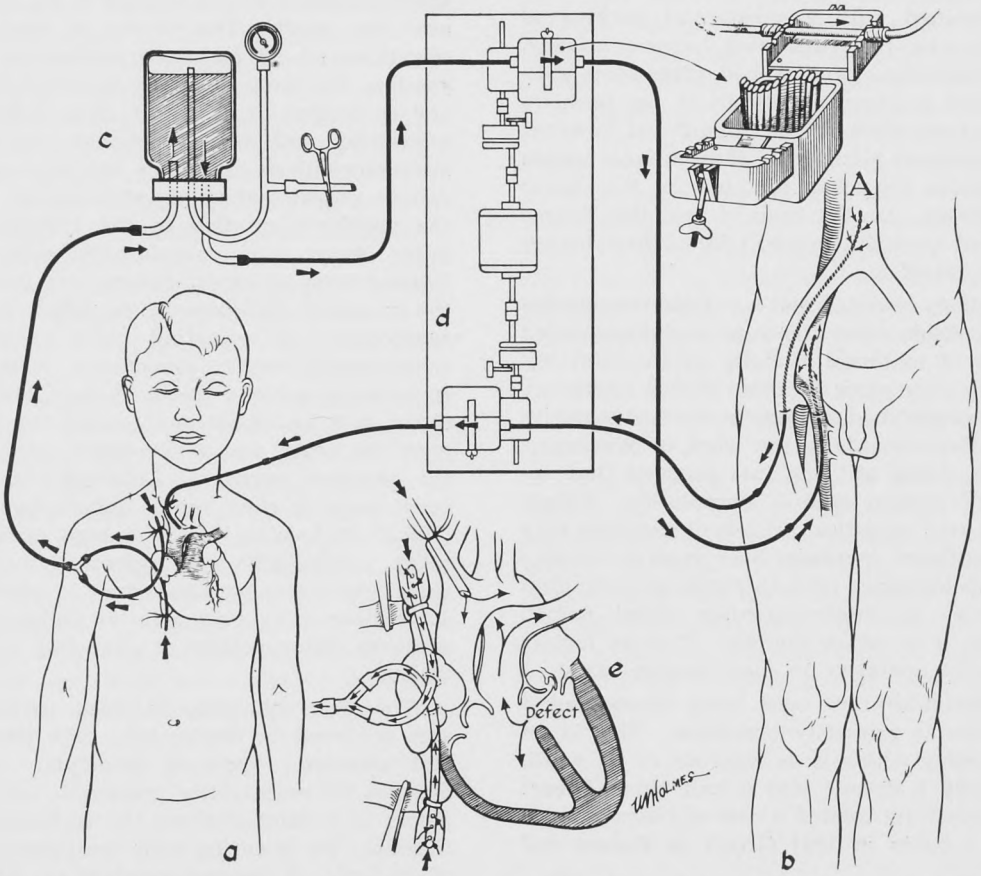
Supported by Research Grants from:
1. Graduate School, University of Minnesota.
2. Minnesota Heart Association.
3. Life Insurance Medical Research Fund.
4. National Heart Institute USPHS, No. H-830.
5. Minnesota Cardiovascular Fund.

The problems entailed in the repair of defects in the interventricular septum are considerably more complex. These defects as a rule lie high in the septum (pars membranacea) in close approximation to the aortic and pulmonary valves beneath the septal cusp of the tricuspid. In addition their margins are often incomplete superiorly. Their closure demands a careful delineation of the defect, often necessitating temporary detachment and suture of papillary muscles. Superiorly where the margins of many of these defects are deficient it is imperative to locate the aortic septum to permit the careful placement of sutures, which, when tied, will permit partitioning of the ventricular chambers. It is apparent that such lesions will require considerably more time than those at the atrial level, thus making the application of hypothermia less practical. Seemingly, more time could be obtained by lowering body temperatures to even more profound levels of hypothermia (22-26°C.). However at temperatures in this range there is a marked increase in cardiac irritability with a disturbing incidence of major abnormalities of rhythm and conduction, often culminating in fibrillation or heart block when manipulations are carried out within the ventricular chambers. It is primarily these latter hazards which to date yielded no recorded success of hypothermia in the repair of ventricular septal defects.

The approach to the development of a reliable, relatively simple method of working within the heart for prolonged periods of time had its principles defined in the experimental laboratory by the demonstration that dogs would consistently survive without discernible sequelae marked reductions of their cardiac output for limited periods of time. This principle of reduced flow has been called the "azygos factor" following its initial demonstration by Andreasen and Watson[16].

Further studies[17] indicated to us that the amount of blood flowing into the heart through the azygos vein while both venae cavae were occluded was a mere fraction of the normal basal cardiac output. These small flows when measured were of the order of 8 - 14 cc/kilogram body weight/minute as compared to the accepted basal cardiac output of 165 cc/kilogram/minute in the dog. It became apparent that the handling of such reduced flows in the development of a method of cardiac by-pass was a tremendous step toward simplification of a seemingly complex problem.

Figure I



Thereupon a method[18, 19] was set up whereby an autogenous lobe in situ was used to oxygenate small amounts of blood which were shunted around both sides of the heart by a simple pump. This method worked well in the laboratory and numerous defects were made and repaired with prolonged survival in a high percentage of the animals. Clinical application of this method had two major drawbacks; namely, that the cannulations of an autogenous lobe are delicate and require meticulous care if pulmonary edema is to be avoided, and because it is necessary to respirate the lungs during the period of by-pass, exposure for the operator is often considerably compromised. As a consequence it was elected to use a compatible donor individual for the purpose of oxygenation. Following extensive trial in the experimental laboratory[20] the following system of cross circulation was worked out (see Figure 1). A survey of the diagram will indicate that utilizing a simple commercial pump, small amounts of oxygenated blood are drawn from the superficial femoral artery of the donor and delivered to the aorta of the patient. At the same time, and in equal amounts, venous blood is drawn from the occluded venae cavae and returned to the donor's saphenous vein for revitalization. The amounts of blood undergoing reciprocal exchange are small and approximate those based on the "azygos flow" principle. The capacity of the extracorporeal circuits is small (approximately 125 cc.) and consequently the system does not require priming with large volumes of additional blood. The circuits themselves consist of hemorepellent plastic which is disposable and can be heat sterilized. At no time does the blood leave the circuit tubing, but is continually massaged in a unidirectional manner by the fingers of the pump which are applied to the external surface of the tubing. Consequently sterilization of the pump is unnecessary.

The use of a donor individual as an oxygenator provides many advantages. Besides perfect oxygenation and carbon dioxide elimination, the clotting mechanism, control of body temperature in the patient and immune mechanisms are maintained. All donors are checked for the usual factors of previous jaundice, constitutional disorders, etc. A complete physical examination, electrocardiogram, chest x-ray and blood count are carried out. Usually the donor has been one or other parent but in a few instances a distant relative or unrelated volunteer has been utilized. Blood groupings and cross matchings are carried out to include the usual ABO system and Rh antigens as well as such better known blood types as Duffy, Kell and Cellano (factors which are not matched in the routine cross-matching and administration of bank blood). In addition an indirect Coombs test is carried out as part of routine matching of blood in this hospital. Routine postoperative plasma hemoglobin levels are also determined.

Clinical application of cross circulation was first carried out in March, 1954. To date the technique has been applied to an ever widening variety of congenital cardiac defects. In all, some 41 cases have been operated on the results of which may best be discussed with reference to the various types of defects.

Interventricular Septal Defect

In children born with this condition there is usually a high lying defect between the outflow portions of the two ventricles. Because of the greater peripheral resistance in the systemic circuit there is with each systole a shunting of blood from left to right, frequently amounting to 50-75% of the left ventricular output. This results in a marked increase in pulmonary blood flow which by actual measurement may frequently be many times the systemic flow. This continuous recirculation of oxygenated blood expresses itself as increased cardiac work leading to hypertrophy, pulmonary congestion with frequent respiratory infections, and finally frank failure. Another equally important consequence of this circulatory disturbance is the development of progressive intimal and medial vascular changes in the pulmonary arterioles, with concomitant appearance of pulmonary hypertension. These changes result in elevated pressures which may be measured in the right ventricle and pulmonary artery on cardiac catheterization. Eventually this process may become so severe that pulmonary resistance may equal or exceed systemic, and the left to right shunt may periodically reverse, becoming right to left. Clinically this is heralded by the appearance of episodes of cyanosis on effort, e.g. crying. Many patients do not survive long enough to reach this latter phase, having succumbed to intractable heart failure or some intercurrent respiratory infection. In those that survive to adolescence, subacute bacterial endocarditis is not an infrequent complication. Recent figures[21] would indicate that at least 50% of infants born with this defect die before the age of 12 months.

At present 25 cases of interventricular septal defect have been operated on by this technique. All these children have been severely crippled with a variety of signs and symptoms such as growth failure, dyspnoea, failure to eat, frequent episodes of pneumonia and cardiac failure. These complications necessitate repeated and prolonged hospitalizations. A few of these infants would not tolerate prolonged intervals out of oxygen. All but one case had moderate to severe pulmonary hypertension on cardiac catheterization.

Repair of these defects was accomplished successfully in eighteen cases. Of these, four patients have been recatheterized in periods up to 6 months postoperatively and show complete

elimination of their left to right shunts. In two instances the pulmonary artery pressure has returned to normal; in the remaining two, the pulmonary hypertension although diminished, is still moderately elevated. It would seem reasonable to assume that the regression of the degenerative pulmonary vascular changes may well require almost as much time as is entailed in its genesis. Only continuous follow-ups will settle this hypothesis. However, the fact that the hypertension may persist after elimination of the shunt is perhaps a potent argument for the necessity of early intervention in cases of interventricular septal defect prior to development of these pulmonary vascular changes. Almost all of these children have shown a striking, almost immediate clinical improvement with weight gain, growth, and increased exercise tolerance.

There were seven deaths in this series of interventricular septal defects, occurring in the immediate or delayed postoperative period. In view of the precarious preoperative status of many of these children, the management of respiratory complications is particularly difficult. Pneumonia and atelectasis are unusually prone to appear and it is only by constant and meticulous management (frequent tracheal suction, half-hourly changes of position, etc.) that many of these infants can be brought through the critical postoperative phase. Three of the deaths were directly attributable to pneumonia and/or atelectasis occurring up to the 11th postoperative day. In one instance the child had a congenital atelectasis which could not be expanded at surgery. It has been our feeling that in some cases the presence of severe pulmonary hypertension may well indicate that an irreversible stage has been reached and closure of the defect at this time may be impossible because of the intolerable burden imposed on the right ventricle. Although mild degrees of peripheral artery desaturation are suggestive of such a stage, we have as yet no reliable method of predicting whether or not a given case with severe pulmonary hypertension will tolerate elimination of its shunt. On the basis of the established high mortality on division of a reversing patent ductus arteriosus it would appear that a similar hazard will exist in some cases of interventricular defect with pulmonary hypertension. Perhaps a more detailed appraisal of lung biopsy and autopsy material carefully correlated with clinical and catheterization data will allow one to predicate with some accuracy at what stage a defect may have progressed beyond the point of salvage.

Tetralogy of Fallot

Although the pathology of this condition was described as early as 1777 by Sandifort,[22] the classical paper by Fallot in 1888,[23] in which he clearly correlated the clinical features with the pathology, led to his name being associated with this malady. The essential features as the name implies are four in number, a high lying ventricular septal defect, some degree of origin of the aorta from the right ventricle, pulmonary and/or subpulmonary stenosis and right ventricular hypertrophy. Clinically persistent cyanosis, not infrequently of delayed onset, in conjunction with a relatively small heart showing right ventricular hypertrophy are seen. Marked limitation of activity, squatting, finger clubbing, polycythemia and growth retardation are frequent.

Prior to 1945 survival of children afflicted with Fallot's tetralogy was largely one of biological selection. Following the brilliant demonstration by Blalock and Taussig[9] of the very real benefit which could be afforded many individuals by the creation of a systemic-pulmonary shunt, this procedure became well established by repeated application in literally thousands of cases the world over. There were, however, some disadvantages to this operation. In infants the subclavian vessels and pulmonary arteries are often so small that such an anastomosis may be impossible, or frequently will undergo thrombosis in the early postoperative phase. Furthermore, as the individual grows, the shunt, if initially successful, does not keep pace with the demands of an ever increasing metabolic pool. The creation of this shunt introduces still a fifth anomaly which although it may be outweighed by the initial benefit bestowed on the individual nevertheless will increase the total amount of cardiac work. As a rule cardiac size increases significantly following the creation of such a shunt. It has been primarily these as well as other factors which have directed the attention of many individuals toward a correction of the tetralogy itself. The first significant contribution in this regard was made by Brock[24] in his direct attack on the pulmonary outflow tract obstruction. Recent assessment[25] of these cases with a control group in which a Blalock-Taussig shunt was created indicates that the results in both groups are roughly comparable. These authors conclude however that an operation with lasting benefit can only be achieved when the ventricular defect can be closed as well.

The use of cross circulation has permitted us to open the right ventricle widely and under direct vision, resect the infundibulum as well as repair the interventricular septal defect. To date ten cases have been operated on with six survivors. One of these patients had an additional interatrial defect which was repaired at the same time. These children are no longer visibly cyanotic, and although relatively recently operated upon, are active and play with the same vigor as their companions. Post-operative assessments including catheterization are currently being carried out. The deaths have been primarily attributable to the

rather painful process of learning a new technique. Injury to the aortic valves and failure to meticulously outline the edges of the ventricular septal defect have resulted in a significant but generally avoidable mortality. However, realization of what can be achieved, along with invaluable experience gained from these initial ten cases promises increasing success. If one considers that a 15 per cent mortality still prevails in the construction of a Blalock-Taussig shunt, or an 18 per cent mortality for a blind infundibular resection alone, it will not seem unreasonable that the initiation of a more radical but curative operation should be attended by an even higher mortality at its inception.

Atrio-Ventricularis Communis

This anomaly also known as incomplete double heart, atrio-ventricular canal or Rokitansky heart is probably one of the most difficult intracardiac anomalies amenable to surgical correction. In its full blown form, there exists a low lying (ostium primum) atrial septal defect, a pair of common atrio-ventricular valves which are usually cleft or deficient at their mid-portions, in conjunction with a high lying ventricular septal defect. As a result of this rather complicated arrangement, all four cardiac chambers are in communication with one another, pulmonary blood flow is increased, cardiac enlargement of a symmetrical nature occurs and failure ensues. Cyanosis is variable but usually absent until the later phases of the disorder.

To date two cases of atrio-ventricularis communis have undergone corrective surgery utilizing the cross circulation technique. The most advantageous approach here is through a wide right atrial cardiotomy. After identifying the lower edge of the atrial septum, the common atrio-ventricular valves and the upper edges of the ventricular septum, interrupted sutures are placed in such fashion as to approximate the upper and lower margins of the defect through the substance of the common atrio-ventricular valves. In some instances it may be necessary to incise these valve leaflets in linear fashion in order to obtain complete approximation of the atrial and ventricular septal edges and consequent division of the heart into its four respective chambers.

Of the two clinical trials, one has been cured as indicated by normal findings on postoperative catheterization. The child has gained weight and on last follow-up is clinically normal. The second case died postoperatively because of inadequate repair which was erroneously attempted through the right ventricle on a mistaken preoperative diagnosis of interventricular septal defect. Attempted closure from below is exceedingly difficult and probably ill advised if the preoperative diagnosis is reasonably clear.

Isolated Infundibular Pulmonary Stenosis

We have had experience with only one case of this defect utilizing cross circulation. The condition is characterized by a marked obstruction to the flow of blood from right ventricle to pulmonary artery. This obstruction usually consists of a hypertrophied band (crista supraventricularis). In some instances this hypertrophy is diffuse, in others it is well localized below a normal pulmonary valve, with a relatively distinct chamber between the valve and the main portion of the right ventricle ("third ventricle"). As a result, although cardiac output may be normal or near normal at rest, once activity is undertaken any significant increase in cardiac output is limited by the size of the pulmonary outflow tract and the already overburdened right ventricle. Clinically the predominant symptom is profound dyspnea. Occasionally cyanosis and clubbing may be present because of the addition of an atrial septal defect (ostium secundum) or incompetent foramen ovale.

The case operated upon concerned a five year old girl with moderately severe limitation of activity. Preoperative catheterization revealed a right ventricular systolic pressure in excess of 130 mm. of mercury (normal up to 30 mm. Hg). Following resection of the infundibular obstruction under the cross circulation technique and uneventful convalescence, she has unlimited exercise tolerance. Postoperative catheterization reveals a right ventricular pressure of 25/0 mm. of mercury, well within the range of normal.

Before closing it is appropriate to mention the status of those individuals serving as donors for these cases. There has been no mortality or untoward delayed sequelae in the entire group. In one instance, due to a technical error, a disproportion occurred between the two circuits of the pump with the result that severe hypotension was induced in the donor. This was detected and by resuscitation and rapid transfusion the situation was rectified without morbidity. The only other sequelae were two instances of superficial phlebitis at the site of the saphenous cutdown which rapidly responded to hot packs. Almost without exception these donors were discharged 36 to 72 hours following the operative procedure.

Summary and Conclusions

1. Congenital heart lesions are considerably more common than formerly recognized.

2. A few of the highlights in the history of the surgical treatment of these disorders are mentioned.

3. The anatomical features as well as some of the aspects of the altered physiology of these anomalies are indicated.

4. The background, development, and application of more recent techniques for the successful

performance of intracardiac surgery are discussed.

5. The demonstration of the feasibility of complete correction of many defects previously considered inoperable should serve to stimulate ever increasing interest and offer a ray of hope to thousands of individuals so sorely afflicted.

420 Medical Arts Bldg., Winnipeg.

Bibliography

1. White, P. D.: Heart Disease, 4th Edition. The MacMillan Co., New York, 1951.
2. Clawson, B. J.: Incidence of Types of Cardiac Deaths in 50,730 Autopsies. J. Lancet, 70: 15-17, 1950.
3. Marish, G. V., Dodge, H. V., and Litchy, J. A.: Incidence of Heart Disease Among Colorado School Children. A Statewide Survey, J.A.M.A., 149: 802-805, 1952.
4. Warkany, J.: Developmental Induction of Cardiovascular Anomalies. Symposium on Congenital Heart Disease, U.C.L.A. School of Medicine, November 17-19, 1954. In press.
5. Sobin, S.: Experimental Creation of Cardiac Defects. Symposium on Congenital Heart Disease, U.C.L.A. School, of Medicine, November 17-19, 1954. In press.
6. Gross, R. E. and Hubbard, J. P.: Surgical Ligation of a Patent Ductus Arteriosus: Report of First Successful Case. J.A.M.A., 112: 729-731, 1939.
7. Gross, R. E.: Surgical Correction for Coarctation of the Aorta. Surgery, 18: 673, 1945.
8. Crafoord, C. and Nylin, G: Congenital Coarctation of the Aorta and Its Surgical Treatment. J. Thoracic Surg., 14: 347, 1945.
9. Blalock, A. and Taussig, H. B.: The Surgical Treatment of Malformations of the Heart in which There is Pulmonary Stenosis or Pulmonary Atresia. J.A.M.A., 128: 189-202, 1945.
10. Murray, G.: Closure of Defects in the Cardiac Septa. Ann. Surg., 128: 843-853, 1948.
11. Bailey, C. P., Lacy, M. H., Neptune, W. B., Willer, R., Arvanitis, C. S. and Karasic, J.: Experimental and Clinical Attempts at Correction of Interventricular Septal Defects. Ann. Surg., 136: 919-936, 1952.
12. Schumaker, N. B., Jr.: Experimental and Clinical Observations on the Closure of Cardiac Septal Defects. Angiology, 5: 289-293, 1954.
13. Lewis, F. J. and Taufic, M.: Closure of Atrial Septal Defects with the Aid of Hypothermia. Experimental Accomplishments and Report of One Successful Case. Surgery, 33: 52, 1953.
14. Bigelow, W. G., Callaghan, J. C., and Hopps, J. A.: General Hypothermia for Experimental Intracardiac Surgery. Ann. Surg., 132: 531-539, 1950.
15. Lewis, F. J.: Personal Communication.
16. Andreasen, A. T. and Watson, F.: Experimental Cardiovascular Surgery. Brit. J. Surg., 39: 548-551, 1951-52.
17. Cohen, M. and Lillehei, C. W.: A Quantitative Study of the "Azygos Factor" During Vena Caval Occlusion in the Dog. Surg., Gynec., and Obst., 98: 225-232, 1954.
18. Cohen, M. and Lillehei, C. W.: Autogenous Lung Oxygenerator with Total Cardiac By-Pass for Intracardiac Surgery. The Surgical Forum, pp. 34-40, 1953. W. B. Saunders Co., Philadelphia.
19. Cohen, M., Warden, H. E., and Lillehei, C. W.: Physiologic and Metabolic Changes During Autogenous Lobe Oxygenation with Total Cardiac By-Pass Employing the Azygos Flow Principle. Surg., Gynec. and Obst., 98: 523-529, 1954.
20. Warden, H. E., Cohen, M., Read, R. C., and Lillehei, C. W.: Controlled Cross Circulation for Open Intracardiac Surgery. J. Thoracic Surg., 28: 331-343, 1954.
21. Fontana, R. S. and Edwards, J. E.: The Types of Major Congenital Cardiac Malformations Encountered in 358 Patients Dying at Varying Ages. Proceedings of Minnesota Society for the Study of Diseases of Heart and Circulation. December 11, 1954.
22. Bennett, L. R.: Sandifort's Observations, Chap. I, Concerning a Very Rare Disease of the Heart. Bull. Hist. Med., 20: 539-570, 1946.
23. Fallot, A.: Contribution a l'anatomie pathologique de la maladie bleue (Cyanose Cardiaque), Marseille Med., 25: 77, 138, 207, 341, 403, 1888.
24. Brock, R. C.: Pulmonary Valvulotomy for Relief of Congenital Pulmonary Stenosis. Brit. M.J., 1:1121-1126, 1948.
25. Campbell, M., Deuchar, D. C., and Brock, R. C.: Results in Pulmonary Valvotomy and Infundibular Resection in 100 Cases of Fallot's tetralogy. Brit. Med. J., 2: 4880, 1954.

Gynecology

Dysfunctional Uterine Bleeding*

Elinor F. E. Black, M.D.

Dysfunctional, or functional, bleeding is uterine bleeding due to no demonstrable cause. Before diagnosing a case as dysfunctional bleeding one must rule out the following conditions:

1. Pelvic Pathology: Malignancy of cervix or corpus, polyps of cervix or endometrium, fibroids, ovarian neoplasms, pelvic inflammatory disease, adenomyosis, disturbance of a pregnancy.

2. Systemic Disorders: Hypothyroidism, blood dyscrasias.

3. Physiological aberrations: Shortened menstrual cycle, ovulatory bleeding.

Dysfunctional bleeding may occur in adolescence, during the childbearing years, or at the menopause. It may occur from any type of endometrium; proliferative, secretory, atrophic, hyperplastic, and the mixed pattern of "irregular shedding". The theory is postulated[1] that the endometrium has a "bleeding threshold", and when the oestrogen level of the blood falls within the limits of this threshold degeneration of the endometrium and bleeding occur. The oestrogen level in the blood is dependent upon three interrelated factors: the mechanism of ovulation (follicle formation, follicle rupture, corpus luteum formation) behind which are the gonadotrophic hormones elaborated by the anterior pituitary, behind which is the mysterious operation of the hypothalamus. If these three factors are working smoothly, cyclic lowering and raising of the oestrogen level in the blood result in normal menstruation. Aberrations in oestrogen level are most likely to occur in adolescence and at the menopause when the three factors are not functioning at their optimum.

The cause of dysfunctional bleeding is not known but the concept is that the blood oestrogen level falls to within the limits of the bleeding threshold and fails to rise again, thus causing continued bleeding from whatever type of endometrium is present. Exceptions to this concept are seen in anovulatory bleeding and metropathia haemorrhagica in which a constant high level of oestrogen is maintained, by unruptured follicles, causing inordinate build-up of the endometrium with inadequate blood supply to the superficial layers via the spiral arterioles resulting in breakdown of these layers and bleeding.

The aim of hormone treatment of dysfunctional bleeding is to control the oestrogen level in the

*Presented at the Sectional Meeting of the American College of Surgeons, Winnipeg, April 25th, 1955.

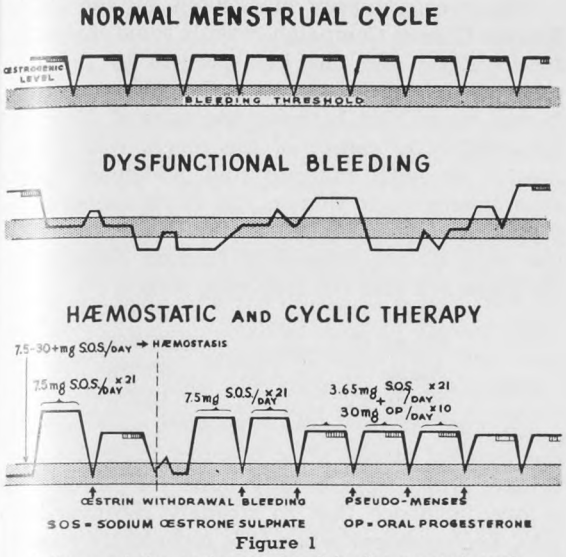


Figure 1

Patterns of the oestrogen level in the normal cycle, dysfunctional bleeding, and during hormone therapy.

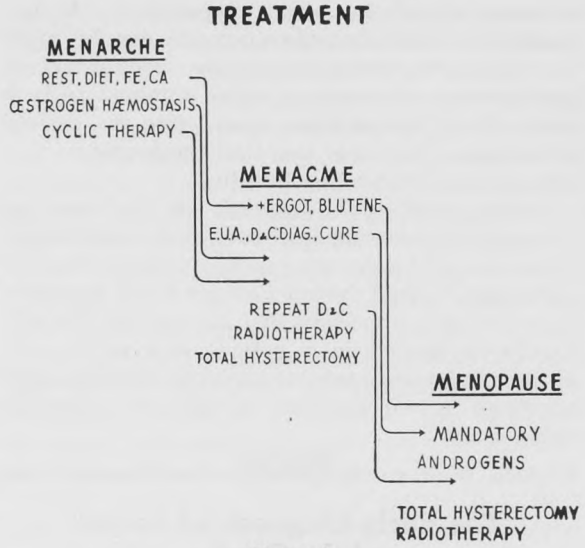


Figure 2

Outline of treatment of dysfunctional bleeding during adolescence, the childbearing years and the menopause.

blood in a physiological manner by the cyclic administration and withdrawal of oestrogens. Only in this way can a supra-threshold haemostasis be assured. The administration of progesterone or androgens will depress the oestrogen level causing a subthreshold haemostasis which is temporary, uncontrolled and non-physiological. (Fig. 1). The regime of treatment of administering oestrogens for three weeks and witholding them for one week mirrors the flow and ebb of blood oestrogen level in the normal menstrual cycle. Naturally occurring oestrogenic substances such as sodium oestrone or Premarin, Questrin, Sulestrex, etc., are more readily tolerated in large doses than is the cheaper synthetic stilboestrol.

To initiate haemostasis in dysfunctional bleeding as much as 30 mg. or more of sodium oestrone sulphate or its equivalent are given daily until the bleeding stops. The high oestrogen level is then maintained by daily doses of 7.5 mg. for a total of twenty-one days. Two or three days after cessation of treatment oestrin withdrawal bleeding will occur. (Fig. 1). In a percentage of cases, particularly in the adolescent, this one cycle of haemostatic therapy is sufficient to regulate the periods. However, should irregular bleeding recur cyclic therapy is undertaken. 7.5 mg. of sodium oestrone sulphate, or its equivalent, are taken by mouth for twenty-one days; cessation of medication results in oestrin withdrawal bleeding simulating a period. Therapy is repeated after an interval of seven days and continued for twenty-one days thus constituting the second cycle of treatment. This plan is repeated for three more cycles with the dosage of oestrogenic substance cut in half and oral progesterone, 30 mg. daily, administered from the eleventh to the twenty first day along with the oestrogens, thus assuring that a secretory phase shall follow the proliferative one in the endometrium as in the normal cycle. At the end of the five cycles of therapy as outlined (Fig. 1) all medication is stopped and in a large percentage of cases normal menstrual function is reestablished. Cyclic therapy should not be resumed for at least three months.

Before hormonal treatment of dysfunctional bleeding is undertaken measures should be taken to build up the organism to an optimum state of health by means of diet, rest, iron and calcium. The oxytoxic effect of the alkaloids of ergot is also useful to limit blood loss. Blutene (tolonium chloride) which is a toluidine blue derivative may be useful for its anti-heparin effect in some patients. Often these simple measures are effective in establishing regular and normal menstruation and further treatment is unnecessary. If the dysfunctional bleeding is of psychogenic origin adjustment of the emotional conflict will also produce a cure. Dilatation and curettage in women during the childbearing years or at the menopause is not only diagnostic but often curative and in these age groups this procedure should be used before oestrogenic therapy is considered as a means of treatment. A diagram of treatment is given in Figure 2, proceeding from the simplest measures to the ultimate radical measures which may become necessary in intractable cases. Small doses of androgens are useful to maintain subthreshold amenorrhea in the menopausal group.

The physiological hormone treatment of anovulatory bleeding or metropathia haemorrhagica is the administration of progesterone for ten days in twenty-eight day cycles to supply the corpus luteum effect which the patient is lacking. In this type of case the diagnosis is made by palpating the

enlarged ovaries by rectal examination. If necessary an unquestionable diagnosis can be made by endometrial biopsy done at two week intervals, proliferative endometrium being obtained on both tests. Basal temperature charts give the desired information but are too time consuming in a woman who is bleeding heavily.

Before making a diagnosis of dysfunctional bleeding and treating it as such it is important to remember that there must be no evidence of pelvic pathology, thyroid dysfunction nor blood dyscrasia. Also it is very important that no hormone therapy should be started in a patient past adolescence until examination under anaesthetic, dilatation and curettage have been done to rule out a possible malignancy.

Reference

1. Bishop, P. M. F.: "Gynaecological Endocrinology," 1946.

The Early Diagnosis of Cancer of the Cervix

Ross L. Willows, M.D.

Department of Obstetrics and Gynecology, St. Boniface Hospital

During the past decade there has been an increased interest in the diagnosis and treatment of cancer of the cervix. This interest has been stimulated by the more frequent recognition of this type of cancer in its early stages and some new methods for the detection of the disease. Cancer of the cervix occurs in a mucous membrane which is accessible to examination and observation. Since it is often the site of malignant change, an intensive study has been made of the processes that lead to these changes. These changes reflect a progressive activity within the epithelial layer. They range from basal cell hyperactivity, through atypical hyperplasia or dysplasia, to intra-epithelial carcinoma and finally to frank invasive carcinoma of the cervix. Somewhere in the course of these changes a line is crossed and a benign lesion becomes a malignant one. It is the early detection of this fateful change that will enable the clinician to institute successful treatment.

The cervix as a site of malignant change in the female is second only to cancer of the breast. In Manitoba cancer of the cervix represents 14% of female malignancies. At the same time it accounts for 20% of the mortality from malignancy, indicating that treatment is less satisfactory than in other types of malignancy. Vital statistics supply the information that an average of 30 patients each year are registered with cancer of the cervix as the cause of death. In 1952 16 new cases were registered in the Tumor Service at St. Boniface Hospital and about 44 at the Winnipeg General Hospital. The most recent breakdown into stages (not The League of Nations classification) shows that 33.0% were localized, 43.5% have regional involvement, 19.0% have distant metastases and in 4.5% the stage was not stated.

The recent survey of London by the British Empire Cancer Compaign reveals some interesting facts. Eight and one half percent of the cases reported existed in women under 40 years of age. It was found that between the ages of 45 and 65 the liability to cancer of the cervix was 7 times greater amongst married and widowed women than among single women. In 34.0% cancer of the cervix was present before the menopause. On the basis of the League of Nations classification the cases fell into the following stages:

Stage I	23.4%
Stage II	37.0%
Stage III	23.7%
Stage IV	13.2%

In 1.9% of the cases carcinoma was found in the cervical stump after a supra vaginal hysterectomy which was usually done for fibroids. It is this incidence that so strongly recommends a total hysterectomy when it is technically possible.

This will give us some idea of the present status of cancer of the cervix. To change this picture the most promising opportunity lies in earlier diagnosis. This will become more apparent as we examine the cure for the various stages of the disease. The five year salvage is generally accepted as:

Stage 0	100%
Stage I	75%
Stage II	50%
Stage III	25%
Stage IV	5%
For all cases	50%

Stage 0 has recently been created to accommodate the cases of intra-epithelial cancer or carcinoma in situ. Each one of these stages represents a line that is passed in the progress of the disease. When an early carcinoma of the cervix passes from Stage 0 to Stage I it means that the basement membrane of the epithelial layer has been breached and the cancer has become invasive. When the disease passes into Stage II it ceases to be confined to the cervix and spreads out into the parametrium or the vagina thus presenting a graver prognosis. In Stage III the pelvic wall or the lower third of the vagina has been invaded and the problem of treatment becomes increasingly difficult. In Stage IV the bladder or the rectum have become involved or there is spread outside the pelvic with distant metastases. This is the finial stage with a hopeless prognosis. It is self evident that, the more cases can be diagnosed in the early stages, the better will be the total salvage.

There is an additional advantage in early diagnosis. Those cases falling into Stage 0 or intra epithelial carcinoma may be treated satisfactorily by surgery. Usually a total hysterectomy is performed, dissecting out some of the parametrium and removing a generous cuff of the

vagina. This has the following advantages: The ovaries are preserved, the vagina is only slightly decreased in size and does not undergo the stenosis and fibrosis that result from radiation, and in addition the incidence of fistulae and the complications of pelvic fibrosis are somewhat lower. When cancer becomes invasive, radiation is the treatment of choice.

The opportunity of changing the statistics with respect to results in the treatment of cancer of the cervix rests with the doctor who first sees the patient. Since early cancer may be present without any sign or symptom, it is only by some complete screening test such as is attempted in syphilis and tuberculosis that the fullest resources of medicine will be made available to the victims of the disease. This is not regarded as an essential service at the present time. However the examination of the cytological spread or as it is more commonly known, the Papanicolaou smear, is developing a high index of accuracy in this diagnosis and may eventually serve as such a screen test.

Let us review the aids to diagnosis in this condition.

Symptoms

The London Survey of the British Empire Cancer Campaign lists the most common symptoms in this order:

Irregular hemorrhage	53.2%	67.5%
Sudden profuse hemorrhage	11.4%	
Bleeding after coitus	2.9%	
Vaginal discharge	20.0%	
Pain	7.5%	

Unfortunately these are very common gynecological symptoms and not at all specific for carcinoma of the cervix. At the same time when they are encountered cancer must be kept in mind and an effort made to rule it out.

Vaginal Examination

The London Survey showed that 71% of the patients had been examined vaginally on their first visit to the doctor. This might compare very well with the percentage of female patients who receive a pelvic examination on their first consultation with the doctor in the province of Manitoba. However when we consider the seriousness of the disease from which they suffer, it leaves a serious deficit. To make a diagnosis, an examination must be made. The more patients that are examined, the more frequently the diagnosis will be made.

Associated Lesions

Both invasive and intra-epithelial cancer may exist in a perfectly clean cervix. However there is an increased incidence in the diseased cervix. Several series have shown that carcinoma of the cervix may be present in 1% to 2% of cervices where the chief lesion is erosion or some other pathology. This is a sufficiently high incidence to prompt investigation of these lesions. In the treatment of the eroded or the infected cervix it should be the practice without exception, that a biopsy of the cervix is obtained before cautery is performed. Cautery may obliterate the pathological picture and mask an early carcinoma only to be encountered later in an advanced stage. The Schiller test may be helpful in outlining the diseased tissue and indicating the site for biopsy.

Cytological Studies vs. Biopsy

In recent years the Papanicolaou spread has had a wide application in the diagnosis of cancer of the cervix. Its efficiency depends on the fact that the characteristics of malignancy can be recognized within the individual cell and that malignant cells tend to be shed more readily than ordinary cells. Its accuracy depends on how the material is obtained, how it is spread, how it is fixed, how it is stained and finally the skill and experience of the cytologist.

Biopsy is the time honored method of diagnosing or confirming the presence of carcinoma of the cervix. The most practical application is the use of multiple punch biopsy. This may be practiced as an office procedure usually taking four specimens at 12, 3, 6, and 9 o'clock sites. Foote and Stewart at the Memorial Hospital in New York have taken 27 cervices with known early cancer and by serial sections have localized the site of each lesion. They then estimate the accuracy of diagnosis by biopsies taken from different sites. Their results were as follows:

	Diagnosed
Biopsy from the anterior lip	13
Biopsy from the posterior lip	13
Biopsy from the ant. and post. lip	20
Biopsy from four sites	25

We see that even after taking multiple biopsies two cases remained undiagnosed.

A recent series at the Cook County Hospital showed that biopsy failed to diagnose the lesion in 9.3% of cases and cervical spread failed in 4.6% of cases. When both methods were used only 1.7% of cases were missed.

The cervical spread is more sensitive in the diagnosis of early cancer than is the biopsy. This is due to the fact that a number of the lesions have their primary site in the cervical canal and that in the very early stages they may occupy a very small area on the cervix and be missed. Spreads are examined at the Pathological Department of the Winnipeg General Hospital and the Cytological Laboratory at St. Boniface Hospital. An increasing use of this service will have two beneficial effects: the accuracy of diagnosis will improve and the cost may be reduced.

If the diagnosis of intra-epithelial cancer is made by either of the above methods, a further step is necessary. Invasive cancer must be ruled

out by doing a coning biopsy and examining the specimen by serial sections.

The object of our efforts should be to obtain an earlier diagnosis of cancer of the cervix. At the Cook County Hospital they found 44% of their cases falling into Stage I. At the University Hospitals in Cleveland in 1949 there were 63 new cases of carcinoma of the cervix. Twelve or 19% were carcinoma in situ. Eleven of these were diagnosed by means of cytological spreads.

Summary

1. The possibility of cancer of the cervix must be kept in mind in the management of every female patient, particularly in the presence of vaginal bleeding, leucorrhea and visible cervical pathology.

2. Every female patient should have a vaginal examination at her first office visit.

3. The obtaining of a Papanicolaou spread or a cervical biopsy is an office procedure and offers definite protection against the development of advanced cancer of the cervix.

References

1. Foote, F. W. and Stewart, F. W.: Cancer, 1: 431, 1948.
2. Reagan, J. W.: Cancer, 4: 255, 1951.
3. Way, S.: Malignant Disease of the Female Genital Tract, 1951, J. & A. Churchill Ltd.
4. London Survey of the British Empire Cancer Campaign.
5. Daro et al: Am. J. of Obst. & Gynec., 65: 364, 1953.
6. Percival, E.: Am. J. of Obst. & Gynec., 65: 386, 1953.
7. Younge, P A., Hertig, A. T. and Armstrong, D.: Am. J. of Obst. & Gynec., 58: 867, 1949.

Medical Memoranda

Spontaneous Rupture of the Bladder During Labour

James McCartan, L.R.C.S., L.R.C.P.S.
Fisher River Indian Hospital, Hodgson, Manitoba

Rupture of the urinary bladder in the absence of any apparent cause is an occurrence of such rarity as to warrant placing on record the following case:

The patient was a Treaty Indian, aged 20 years, at term in her first pregnancy. When first seen she was complaining of pain in the lower back. On examination the foetus was presenting as a vertex in the left occipito-posterior position; the cervix was not effaced. Twelve hours later the patient was complaining of persistent lower abdominal pain and it was noticed that there was an obvious swelling in the right lower quadrant which did not extend across the midline. This was first thought to be the distended bladder although the patient had voided several times during the preceding few hours and had once been catheterized; the urine was not blood-stained. There was no evidence of maternal shock and the foetus was in no distress. Because of the pain with the swelling it was decided to explore the abdomen.

After incising the fascial layer and separating the rectus abdominis muscles a large quantity (between 20 and 30 ounces) of fluid was encountered in the extraperitoneal space. This was evacuated by the application of pressure on the overlying abdominal wall.

Subsequently the peritoneal cavity was opened and a classical Caesarean Section was performed. There was no abnormality of the uterus or adnexa except for a small fundal fibroid. On exploring the space formed by the accumulation of fluid already mentioned, a large irregular laceration of the bladder, 4 cm. in length was discovered. This was repaired and re-inforced with a fold of peritoneum. The abdominal wall was closed in the usual way.

A Foley catheter was inserted into the bladder and not removed until the eighth post-operative day. Daily bladder washouts with soda bicarbonate solution were given. For the first five days the patient received injections of penicillin and streptomycin together with a triple-sulphonamide preparation by mouth. There was no pyrexia after the third post-operative day. The abdominal wound healed satisfactorily. The patient was discharged on the twenty-first day.

Special Article

A Medical Elixir*

E. P. Scarlett, M.B.
Chancellor of the University of Alberta, Calgary, Alberta

At the outset you will allow me to say a word concerning the post of University Chancellor to which reference has already been made. It is a role which is not commonly filled by a physician. At the time of my election a medical friend who was familiar with the byways of medical history reminded me that at the time William Harvey was studying at the University of Padua, the newly elected Chancellor of that University had a most arduous initiation indeed. He was expected to provide a banquet with wine for all students, to furnish two hundred spears and two hundred pairs of gloves for a tournament, and finally was a victim of the custom known as 'vestium laceratio' in which the clothes were torn from the Chancellor who was then obliged to buy them back at large prices. My friend remarked that he was glad that such customs had not been carried down until the present day, a sentiment in which I warmly joined.

Whatever the initiation rites, it has been my privilege in this role of Chancellor to link Medicine and the University. Medicine has been for me the medium of life for more than thirty years. I have always felt that the one real service which any man can render to the art on which his life's work is based is that of transmuting the disciplines of his profession through his personality and temperament, and endeavouring to express them in his community and in the world. Such have been my aim and task in the two years in which I have been associated under the happiest circumstances with the University of Alberta. After all, the caduceus of our profession has an ancient right to place among the banners which decorate the walls of our institutions of learning.

In the university world these are stimulating and challenging days. Two problems will interest you as physicians. The first is the question of the professional courses in which our chief concerns are to secure the right kind of teacher (this is paramount), to deal with the overloaded curriculum and to counter the narrowing influence of specialization. The second matter concerns the present academic courses offered in our secondary schools, the effect of which is to transfer to the University responsibility for work and disciplines which should be within the reach of the high school itself. Because of the fact that eighty-five per cent of the students in our high schools do not go on to University, the compromise which has been reached in the matter of the curriculum has affected seriously the fifteen percent of the student population who are matriculants and has worked seriously to the detriment of the standards and quality of work of University matriculation at large. The issue still remains to be settled and I would suggest to those of you who are interested in this matter that you do all within your power to see that a fair deal in our secondary schools is given to the matriculation group where at the present time, as far as professional education is concerned, this is the most important single and immediate battle that remains to be won.

After weighing carefully the specific gravity of the remarks customarily made on an occasion of this sort I have given the title 'A Medical Elixir' to the observations which I am to offer to you. Elixir is the Arabic for the philosopher's stone. In the medical sense it is a tincture compounded of more than one base, so what I am to present is a philosophical mixture with, I hope, more than one ingredient. You may take it as you wish and water it to suit your own inclinations.

* * *

It is a truism to say that the scientific advances and the changing political and economic forces of the last half century have exerted a tremendous influence upon the form and nature of medical practice and on medical education. But is is no truism to point out that in the face of these changes we must be forever strengthening and re-creating our traditions as a profession. A profession is a sensitive, organic, growing thing and not a static order. Furthermore we must constantly remind ourselves that in the world of today a multitude of men and women have been disinherited and confused as the result of two great wars with their social and economic results. A generation under these circumstances is getting an experience of life which is not easily related to the great achievements of the past and the ancestral wisdom of our race. In consequence these people are without roots, they are inclined to mistake quantity for quality, and means for ends. We must never forget that man is a time-binding animal and lives in three dimensions of time as well as of space. He must constantly recover his experiences of the past and build a perspective. Under the present dispensation a condition of things has developed in which this essential perspective is lost and in which man, to an increasing degree, finds himself existing for the immediate present. Such a state of affairs and such an attitude can have nothing but disastrous effects upon any profession and most of all the profession

*Transcript of portions of an address given at a meeting of the Prairie Regional Meeting of the American College of Physicians, Regina, February 4, 1955.

of medicine which rapidly is reduced to a time-serving trade. Not only that, but the confused temper and spectacle of our time are apt to produce in the individual a sense of disillusion, and nothing could be more disastrous to the physician.

It is for these reasons among others that I welcome the smaller meetings of our profession such as this present Regional Meeting of the American College of Physicians. Such meetings are seriously conceived, their benefits are not dissipated by the dilution of tremendous numbers. As well as expressing a primary interest in technical skill and in professional matters they help to assert the basic values of our profession on which its dignity and influence rest.

I make the foregoing observations deliberately if only because I am finding it increasingly difficult in meeting men in our profession to detect the qualities of mind and spirit of the professional man. We cannot as a profession go on living on the capital of idealism and the high repute built up by past generations of physicians. To maintain the foundations and the proportions of our profession it is not necessary that we should go about proclaiming our virtues in the market-place. We have only to follow the example of two thousand years of medicine known to all medical men—doing the job, showing a sense of duty and responsibility, constantly perfecting our professional skill and our broad sympathies. The profession of medicine after all is founded on the common needs of mankind. It is our task to fill those needs with personal integrity and not devote our time altogether, in the modern fashion, to the idols and concerns of business, popularization, the siren of public relations, overconcern about organizations, and the cheap sentiment of the contemporary press. In saying these things I am not advocating that we as doctors should be monks in a medical monastery. I am suggesting that we should be responsible men in our profession and also in our community.

This is not the place to discuss social and economic questions as they relate to the profession of medicine. In this regard I will content myself by repeating a remark made to me a year ago by a medical friend in Dublin: Every one when he grows up should be mature enough to be a socialist at heart, and have common sense enough not to put it into practice.

* * *

We call ourselves internists. I do not know how it is with you but personally I still have some difficulty in making patients see the difference between an internist and a good family doctor. Maybe there is none. Maybe we have set up too exclusive a distinction, contrary to nature's categories. In any event you and I at least know what we mean by an internist, although in a sense it is a specialty that is extremely hard to define.

I have often tried to create in my mind a figure of the ideal internist. I suppose that at times you have all done this. I can think of some ideal internists whom I have been privileged to meet: Gordon of McGill, James Herrick of Chicago, Frank Billings of Chicago, John Parkinson of London, and many others. Each of you can compile your own list from the files of memory.

What are some of the characteristics of the ideal internist? Well, he is one who goes on learning, and fits that learning into a broad frame of values. In regard to this matter of continuing study I think that our profession for the most part has set a good example. Of course it is the only way to find a path through the swarming tangles of the jungle of modern medical knowledge. Whatever the reason, this habit of going on learning, attending conventions and refresher courses which is a striking feature of the medical world of today is a healthy counterbalance to the prevailing attitude to knowledge which seems to reflect at least two attitudes — first, the desire for a short-cut at any cost, and secondly, profound suspicion of learning and of its exponent, the specialist, reflected in the term of reproach, "egghead". You are all familiar with the lines of Alexander Pope which read as follows:

A little learning is a dangerous thing;
Drink deep or taste not the Pierian spring:
There shallow draughts intoxicate the brain,
And drinking largely sobers us again.

The Pierian spring was the ancient Greek symbol for pure learning from which the main currents of Western civilization have flowed, just as Medicine had its origin in the Temple of Aesculapius in Cos. President Griswold of Yale University has suggested certain modern variants of Pope's lines to suggest the two attitudes towards knowledge to which I have referred above. The desire for a short-cut to knowledge;

A little knowledge is a difficult thing —
How far is it to the Pierian spring?
Let's have a quick one at the nearest bar,
Or better still, curb-service in the car.

And the attitude of suspicion with respect to knowledge and particularly the experts:

A little learning is a dangerous thing:
There may be poison in the Pierian spring!
They say it's Greek, but when we hear it gushin'
It sounds suspiciously like Russian!

One can only oppose to these two barbarian attitudes the faculty of learning for its own sake within the frame-work of the values of "the Pierian spring."

Our ideal internist is one who has character and humanity. This is essential in a time which is increasingly concerned with collectivism and increasing uniformity — both against a background of anxiety and violence. This may be the age of the Common Man — but in medical practice it

cannot be such if by the term 'the Common Man' we mean a depersonalized abstraction. For us as physicians the patient must remain always a living individual and not dissolve into a dry abstraction attended by a series of specialists who see such patients through the tiny orifice of a particular specialty, and finally when things get bad turn the patient over to the psychiatrist as a last resort.

To counter the effects of specialization there must be a broad humane view of the patient. That means each physician exercising his responsibility on a broad plane. And responsibility is always a hard bread to be eaten with a rough wine, and not sopped in milk. No one can eat it for us. Each one of us must eat it for himself or starve.

The ideal internist participates as widely as he can in the life of his immediate society and of his country at large. In this regard I feel that our profession has lost ground in the last generation. No longer do doctors serve on municipal boards, in organizations of their community and in helping to form public opinion at large. Only recently a friend told me that he got into conversation with a doctor in the course of a social evening, and when he endeavoured to turn the remarks to certain problems in Canada, he was floored by the words of the doctor who replied: "I am afraid that I know nothing about these things. I never read anything but books on the eye". Such an attitude diminishes our profession indeed.

Of course in this regard medical men are in a sense only following the trend of the times. Non-participation is the curse of our day. The average person gets at second hand appreciation of sports, music, drama, and the active life of his community. This is a trend which we in Canada should be at special pains to correct for we in this country still have to create a nation — and by a nation I mean interpreting ourselves to the world at large and to ourselves by writing books and articles, composing music, creating art and architecture and working at pure science. A nation without the arts in this sense is not a nation at all. And these things are only done by taking part in the social life of our times, by aiming at creative activity however small.

Finally our ideal internist is a balanced man, a man of 'the middle propositions', to use Dr. John Brown's fine phrase. Such a man is one who strikes a happy balance between theory and exact facts on the one hand and their selection and application on the other, between technology and informed art, between the essential maximum of knowledge and the essential minimum of sagacity and judgment which make up the art of medical practice. Such a man avoids conscious or unconscious charlatanism. For I would remind you that Aesculapius, the patron saint of Medicine, and Circe the siren were half-brother and sister, both children of the Sun.

* * *

I am at this point acutely aware of the fact that in what I have been saying I have been guilty of more than a measure of sermonizing, but on further reflection I cannot find that I should apologize for the fact. Somehow or other I feel that things of this sort need to be said at this time. And indeed I find that as one grows older one is bolder to state more of the truth than he would have done in his salad days when he was more afraid of the curious inhibitions which surround the physician when it comes to speaking of the broad matters of philosophy which underlie our profession. However, in spite of all this, I think that I have done enough speculating and generalizing for one occasion, and we may now return to the immediate problems of medical practice. As Hippocrates said, the duty of a doctor is to treat, not to philosophize.

This is a meeting of the Prairie Region of the American College of Physicians. It is being held in this city of Regina which occupies a strategic place in our Western land. With this in mind I would like to share with you a metaphorical toast which should be in the heart of every one of us who live in this plains and foothills country. The words of this toast are as follows:

> I drink to my country — bounded on the North by the Aurora Borealis, on the South by the procession of the equinoxes, on the East by primeval chaos, and on the West by the Day of Judgment.

Those words top off the elixir which I have given you on this occasion, a tincture with a certain philosophical flavour compounded of several bases. This elixir is given you in the time-honoured way of any prescription under the superscription and the blessing of Jove.

To combat nervousness and fatigue

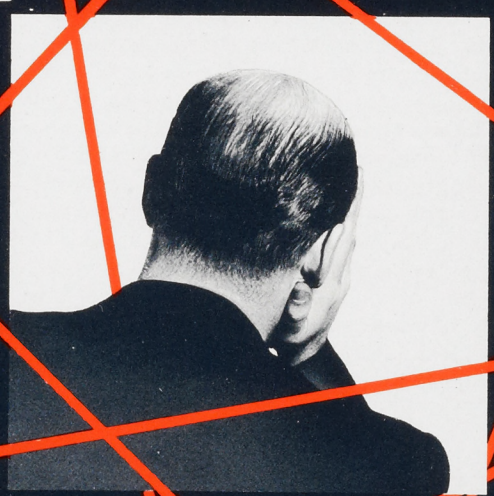
"Beminal" with Phenobarbital constitutes a direct approach to correcting the neurasthenic syndrome so typical of a deficiency of the B vitamins. The fatigue, insomnia, poor appetite, forgetfulness, and inability to concentrate respond quickly (and often dramatically) to therapy with "Beminal" with Phenobarbital.

Ayerst, McKenna & Harrison Limited

Montreal, Quebec

"Beminal" *with* phenobarbital

tablets and liquid



Ayerst

Orthopedics

Congenital Dislocation of the Hip-Joint and Inadequate Acetabulum

Alexander Gibson, F.R.C.S., (Eng.)

Congenital Dislocation of the hip-joint is not a common condition. Among 4000 births in Winnipeg during 1954, there were only 4 cases, and a similar report emanates from New York. On the other hand it is very frequently met with among certain Indian tribes, particularly those of the Island Lake region. We owe to Corrigan and Segal a very interesting study of those people. The remarkable fact was brought out that the incidence of congenital dislocation was something like 6%, i.e., 60 times the frequency to be met with in white races. A genealogical table compiled by these authors suggests strongly that heredity is an important factor. There may, however, be another element. It is a common practice among some Indians to carry the baby in a moss-bag known as a "tikkinagan" or "waspissoan", and this may go on for as long as 3 years. It is possible that the cramped position and lack of exercise enforced on the infant may lead to gradual pushing of the head of the femur backwards and upwards until finally it is extruded from the socket. Thanks to more careful medical service we are now seeing Indian children at a much younger age. It will be interesting to see if the frequency of this malformation is reduced in the coming years.

It is important to grasp the fact that dislocation of the hip-joint is an end-result rather than a pathological entity. In many individuals the deformity stops short of actual dislocation, but the deformation which persists may prove even more of a handicap than a complete luxation.

All joints are designed to combine the two properties of stability and mobility. At the one extreme we have the amphiarthroses, situated in tht median plane of the body. These normally provide extreme stability with a very small degree of movement. At the other extreme is the shoulder joint with a very high degree of mobility but comparatively little stability. In between there are varying proportions of these qualities. How is the safety of these joints secured? Every joint shows three "safety factors" combined in different measure:

1. The form of the bones as in the elbow, the ankle or the hip.

2. The ligaments, as in the knee, the wrist, the sacro-iliac, the clavicular joints.

3. The muscles, as in the shoulder, or the cervical spine.

Mobility itself is a prime factor of safety as every boxer knows and every stem of wheat demonstrates.

The hip-joint is a ball-and-socket joint with movement in 3 dimensions. It has to transmit the whole weight of the trunk, and any burden that the subject may be carrying. It is therefore amply served by powerful muscles; it has strong ligaments, and the socket is so formed that, whatever the position of the limb, the thrust conveyed through the lower limb is countered by a surface at right angles to that thrust. That means that the globular femoral head must be partially enclosed; in other words there must be a fair amount of overhang of the acetabular roof. Otherwise the thrust of the lower limb at every step will tend to shear against the roof, producing an outward thrust, and this will be more marked if the head of the femur is not globular but flattened. All the muscles about the hip which have a transverse component, and they are many and powerful, will tend to keep the head of the bone firmly pressed into the socket. If, for any reason, they become weaker and allow the femoral head to travel outwards away from the median plane, an undue proportion of the thrust is conveyed to the outer part of the acetabulum, and the shearing force is progressively exaggerated. Hence the necessity for a well-developed acetabular overhang.

At birth the head of the femur is entirely cartilaginous, the ossific nucleus has not yet appeared and the portion of the ilium which forms the roof of the socket is also largely cartilaginous; expressed otherwise, both the skeletal components of the hip-joint are comparatively ductile. By the age of 6 months, considerable bony tissue has appeared, and the opportunity to mould the constituents of the joint is passing rapidly. By the age of 12 months the chance for re-modelling is just so much less. That is the reason why it is so vital to recognise at an early date any deviation from the normal. That is why the first 12 months of postnatal life are of paramount significance. That is why every obstetrician should make it routine practice to test the hip-joints in the new-born. There are 3 simple observations to be made; they need not occupy more than a few seconds of time.

1. Note the folds on the inner side of the thigh.

2. Place the child on its back and note the relative height from the table of the distal end of tht right and the left femur.

3. Separate thighs in abduction and outward rotation.

A difference in the two sides will readily indicate a unilateral dislocation. If there is reason to suspect a bilateral dislocation, then the "sign of

the jerk" (Ortolani) may be sought for. "The infant is placed flat on his back on a firm mattress or table. Knees are flexed on thighs and hips are flexed 90° on the pelvis. The thighs are slightly adducted and internally rotated on the pelvis. The physician's thumbs are placed over the medial aspect of the infant's knees and the fingers are spread over the lateral aspect of the thighs and greater trochanters. Slight pressure is exerted in the direction of the femoral shaft to produce maximum displacement of the femoral head from the acetabular ridge. Gradually the knees are spread apart. Abduction of one or of both hips may be limited and blocked with luxation or subluxation. Pressure is exerted medially and upwards on the greater trochanter of the affected hip or hips while abduction and external rotation force is continued. A sudden and abrupt click, jerk, snap or shock occurs. The snap is tactile, audible and visible. It is painless and causes no distress to the infant. Concentric and atraumatic reduction of the femoral head within the dysplastic acetabulum follows the sign 'of the jerk' or 'jerk of entrance' which results when the fovea capitis suddenly met and rode over the acetabular ridge. Following the abrupt snap the affected thighs immediately reach the highest degree of physiological, symmetrical abduction." (Vernon Hart.)

Let us suppose then that the "congenital dislocation" has been diagnosed at birth. What is the next step? Putti taught us that it is only necessary to maintain abduction in order to restore the hip to normal. How is this to be done? The most obvious and possibly the easiest way is by the use of plaster of Paris. This should be applied as a double spica. The "frog" position is the usual one adopted. One cannot but ask if it is always the best. 90° flexion at the hip is certainly permissible, but is 90° abduction always wise? It is never a satisfactory procedure to keep any joint at the limit of its range. Probably 70° abduction and external rotation is a more efficient position. The use of plaster has disadvantages. It is inevitable that it should become contaminated, and above all the fixation of the joint deprives the articular cartilage of the combined pressure and gliding that are essential to its well-being. Provided the position of abduction is maintained, movement in other directions is definitely beneficial. The muscles are active, and through their activity bone growth is stimulated. The general well-being of the child is much enhanced by freedom of movement, hence splints have been devised to allow of this. The most popular is the Frejka Splint. It is essentially a perineal pad kept in position by a harness. With this, the child can sit, or crawl, and later on it can walk, climb, or ride a tricycle. The disadvantage is the risk of soiling, especially in hot weather and on this account other types of splint have been devised. One such, designed by Ilfeld, has metal thigh cuffs joined by a horizontal bar, set so as to leave the perineum free. This splint permits the child to do anything possible to an ingenious youngster whose thighs are tethered in abduction, even to scaling a ladder.

It is clear that if the congenital dislocation is diagnosed at birth, and treatment begun at once, the outlook for recovery is very bright. Unfortunately we generally see these children after they have begun to walk, at the age of 15 months or later. For them the prognosis is not necessarily hopeless, although one cannot adopt the same confident attitude that can be assumed at an earlier period. Up till the age of 3 and sometimes even later, it is, upon occasion, possible to reduce the dislocation, perhaps after preliminary traction or systematic abduction. There are, however, more disappointments than successes. What seems to be the matter?

1. Recurrence of the luxation is not infrequent.

2. Stiffness, either in the joint itself or in the surrounding soft tissues is often pronounced.

3. The range of movement at the hip may be permanently diminished.

4. There is practically always some deformity of the head of the femur and of the acetabulum.

5. These joints are not so durable as the normal. In early adult life they tend to become unstable; the patient tends to walk with a lurch, and in early middle age, they are apt to become irritable and painful. The constant stress of weight-bearing thrusts the femoral head further from the middle line of the body, attrition of the articular cartilage occurs, osteophytes form and in a word, osteoarthritis develops.

These are disagreeable ingredients in the "Follow-up." The depressing thing is that the longer the follow-up the more depressing the picture becomes. It is not surprising therefore that attempts have been made to improve the outlook by open operation. In Europe, some 60 years ago Hoffa led the way, and in Canada Galloway spoke and wrote in favour of open reduction. Until recently the surgical approach was always made from the front, with inevitable weakening of the abductor muscles of the hip. Recently the attempt has been made from the postero-lateral aspect. This gives a much more extensive view of the topography of the dislocation and it has been found that there exists an upward and backward diverticulum of the joint into which as into a hernial sac the head of the femur may re-dislocate. At operation this diverticulum is purposely obliterated and at the same time a retaining shelf is turned down from the side of the ilium, thus attempting to lay the ground for the development of an acetabular overhang. It is too early to draw conclusions although results so far are encouraging. But we should not forget that we

always look at our own babies through rose-coloured spectacles. One thing is certain, no measures which are adopted late will ever result in a perfect hip-joint, and the later they are undertaken, the poorer will be the final outcome.

Every consideration emphasises the teaching that it is imperative to detect the deformity as soon as possible. One can see how weight-bearing must influence the shearing strain, but it is not always appreciated that weight-bearing commences not when the child begins to walk but when it begins to crawl, and that is usually about 6 or 7 months.

The first critical period in the child's life is at birth; the second is about the age of 6 months, when weight-bearing is begun. At this time a second routine examination of the hips should be made. On this occasion the examination should include a radiograph. Routine examination at birth is not satisfactory, owing to the lack of ossification about the joint. By the age of 6 months, a good X-ray picture will enable an expert orthopaedic surgeon to form a reasonably exact estimation of the bony conformation of the joint. There are numerous "lines", angles and other points of reference which determine with considerable accuracy the adequacy or otherwise of the acetabular roof. Any deficiency should be known about before weight-bearing commences so that abduction treatment may be instituted before it is too late. It is altogether likely that in these days of multiple prophylactic vaccinations, the general public would accede without demur to a painless, trouble-free test, (especially if medical care is prepaid), and all the more readily if it was realized that recognition thus early of a defective hip-socket and appropriate treatment might anticipate and avoid the later emergence of an osteo-arthritic hip. The price to be paid is negligible when one considers the irreversible degenerative process, the pain, the limp, the fatigue, the limitation of movement, the personal, social and economic penalties inseparable from "Morbus Coxae Senilis." The time to commence the treatment of osteo-arthritis of the hip is at the age of 6 months. Severin reported on 72 cases of congenital dislocation of the hip, all treated by closed reduction. Most of the patients were under the age of 3 and all were less than 5. Re-examination of the children was made between the ages of 6 and 12. The results were instructive. In all patients, the functional results were better than the anatomical; 90% had no complaints. He grouped the findings as follows:

Well-developed hip-joints	24	33.3%
Moderate deformity of the femoral head or neck or acetabulum in otherwise well-developed hips	7	9.7%
Dysplastic, but not subluxated	14	19.5%
Subluxated	27	37.5%
	72	100.0%

The resiliency of childhood is astonishing, but the years go by quickly and the reserve is rapidly depleted. We cannot regard with complacency the figure of 66% who enter adolescent life with structurally unsound hip-joints. How unspeakably precious are these first 12 months!

Suppose nothing is done, what is the functional outlook? Congenital dislocation of the hip is compatible with a long and active life. A recent patient was an Indian woman of 50 who had borne 10 children and was still as competent as her neighbours for all the activity demanded by life on an Indian Reserve. Unfortunately functional considerations are not the only ones. There are psychological and social facets that have to be recognized. Attempts have been made to improve the state of things by such operations as those of Lorenz or Colonna. The results are in general disappointing. At a later date, (and it may not be so very much later) the problem is that of the treatment of osteo-arthritis of the hip. Fusion will relieve pain if it is successful; it cannot be offered to the bilateral case. Arthroplasty in some form may be attempted. A recent case was treated by a McMurray Osteotomy. Whatever is done there is always a sacrifice of mobility; the best we can hope for is relief of, or perhaps freedom from pain. When the condition is bilateral the price paid comes very high.

Summary

1. Congenital Dislocation of the hip is not a common condition.

2. A complete dislocation is functionally less disabling than subluxation.

3. It is possible to diagnose dislocation at birth.

4. It is possible to recognize inadequate acetabulum at the age of 6 months.

5. Abduction is the key to restitution. It should be maintained until there is evidence of a stable hip.

6. Open reduction with obliteration of the diverticulum and formation of a shelf may prove of value in relatively late cases.

7. When osteo-arthritis has developed, sub-trochanteric osteotomy may provide improvement.

References

1. Corrigan, C. and Segal, S.: Can. Med. Assoc. Jour., 62: 535-540, 1950.
2. Hart, Vernon L.: Minn. Acad. Med., 30: 889, 1947.
3. Ilfeld, F. J.: Personal communication.
4. Putti, V. J.: Bone and Joint Surg., 11: 798, 1929.
5. Severin, E.: J. Bone and Joint Surg., 32-A: 507, 1950.
6. Medovy, H.: Personal Communication.

"Problems of the Newborn Infant"

A series of case reports and commentaries from the files of the Winnipeg General, St. Boniface and Children's Hospitals, illustrating factors which affect the survival of the infant during his first week of life.

SERIES VI

Shoulder Dystocia as a Cause of Foetal Death

H. Guyot, B.A., M.D.
Chairman, Department of Obstetrics and Gynecology, St. Boniface Hospital

Any obstetrician who has been confronted with a case of impacted shoulders will agree that this complication of labour is one of the most difficult to manage and that the life of the baby is often jeopardized. Indeed many babies are lost because of the delay in delivering the shoulders and the trauma they are subjected to, such as compression of the cord and chest, injuries to internal organs, central nervous system, fractures, etc. Even a ruptured uterus may result, and such cases have been reported.

This complication often comes as a surprise and any one who practices obstetrics should be well versed in the management of this emergency. What is most deplorable is the fact that in the majority of these cases the infants are perfectly normal except that they are oversize.

The causes of dystocia due to the shoulders are usually the following:

1. A large baby or a contracted pelvis.
2. The anterior shoulder is caught under the symphysis or the shoulders have rotated to the transverse diameter of the outlet.
3. The cord may be too short and tight around the neck or over a shoulder.
4. There may be some foetal abnormality such as hydrops foetalis, large chest or abdomen, cystic kidneys, ascites or a monster.

In such cases, after the head is delivered it presses against the perineum, and it becomes difficult to introduce a hand in the vagina. Traction on the head only serves to stretch the baby's neck and brachial plexus.

If there is delay in the delivery of the shoulders, four fingers should be introduced in the vagina to determine the cause of impaction and free the cord if it is being compressed. Now, with the fingers inside and the hand outside, the shoulder girdle is rotated into the most favorable pelvic diameter, which is one of the oblique diameters. If delivery is impossible by the usual method, aided by a contraction and gentle pressure on the fundus, then the shoulders should be given a turbinal movement to disengage the anterior shoulder which is caught behind the symphysis. This is done by applying pressure on the anterior aspect of the posterior shoulder, using two fingers of the right hand, and rotating the body 180° clockwise, if the back is to the right. This manoeuvre will disengage the impacted anterior shoulder which now becomes posterior, and delivered. The remaining shoulder, now under the symphysis, is delivered in a similar manner by reversing the procedure and turning the body 180° counter-clockwise.

The rotation is made only when the posterior shoulder has passed the ischial spines and is helped by pressure on the fundus.

The same technique can be used to deliver the shoulders in a breech presentation, but instead of pressure on the fundus gentle traction on the legs is substituted.

This method of "screwing" the shoulders out of the pelvis has been demonstrated by an ingenious manikin devised by Woods in 1942. It is a very useful manoeuvre and can be done with the least amount of damage to the infant.

Should these manipulations fail, the next procedure is to deliver the posterior arm. It is necessary to insert the whole hand, to grasp the arm and bring it down over the face, not over the back. Extreme caution is required because injury to the brachial plexus, cervical spine, haemorrhage into the spinal canal, fracture of the clavicle or humerus may occur. In exceptional cases the humerus may be deliberately fractured to save the baby. I have done it twice. Such a fracture heals well and is a small price to pay for the life of a healthy, large baby.

Since these manipulations take much time, during which the child may die, DeLee advises to insert a catheter into the child's trachea before the shoulders are delivered and to blow sufficient air into its lungs to prevent asphyxia. This procedure appears impractical to me but the mother should certainly receive pure oxygen for the sake of the baby.

The following case report, taken from the files of St. Boniface Hospital and reviewed at our monthly meeting, illustrates the difficulties encountered and the resulting death of the infant.

Case History

Case No. 54-9126.

Age 38, para 4, grava 7.

L.M.P. Sept. 27, 1953; E.D. — July 5, 1954.

Previous Pregnancies

From 1934 to 1943 the patient had delivered five large babies ranging in weight from 9 lbs. 12 ozs. to 12 lbs. Three labors were prolonged and two were relatively short, lasting three and eight hours. There was no history of diabetes and no blood sugar estimation had ever been done.

(It is well to remember that when there is a history of large babies a simple urinalysis for sugar is not sufficient — a blood sugar should be done. Many of these mothers are diabetics or potentially so.)

Present Pregnancy

A period of eleven years had elapsed since the last pregnancy. There was nothing abnormal during the present pregnancy except some oedema of the ankles during the last few weeks and a total gain in weight of 38 lbs. There was no sign of toxaemia, no albuminuria; B.P. was normal. She had followed no special diet.

Delivery in Hospital

Patient was admitted at 8 p.m. July 4, 1954. B.P. 125/75. Membranes were intact and she was having irregular and weak contractions which gradually subsided. On July 5 a medical induction was started with quinine sulphate gr. 3 for two doses, followed by pitocin intramuscularly in three doses of 1, 2 and 3 minims at twenty minute intervals. Contractions began one and a half hours later and became fairly strong, three to four minutes apart. At 4 p.m. the cervix was three fingers dilated, contractions every 2 or 3 minutes. F.H.S. 130. At 5 p.m. the membranes ruptured spontaneously and about 200 cc. of meconium stained fluid escaped. F.H.S. 136. In spite of good contractions and good bearing down efforts progress was slow and the head was crowned at 5.45 p.m. A few more contractions brought the head through in an L.O.A. position. The head was large and left little room for manoeuvres. The cord was felt about the baby's neck but could not be grasped easily to be clamped and cut so that the attending physician decided to deliver the baby through the loop of cord. (At autopsy the cord length was 97 cm.)

The shoulders appeared to be arrested, and a hand was introduced in the vagina in an attempt to deliver the posterior shoulder. With great difficulty the posterior shoulder and arm were delivered, aided by fundal pressure. In the meantime the baby made no effort to breathe, and the face was cyanosed. There was also some delay and difficulty in delivering the other shoulder and body, using traction in the baby's axilla. The birth was completed at 6.21 p.m., approximately 30 minutes after the birth of the head. There were no cord pulsations, the apical heart beat could not be felt or heard, the baby was limp, lifeless. All attempts at resuscitation, including aspiration of trachea, oxygen under positive pressure, mouth to mouth insufflation, adrenalin injected into the heart, were of no avail.

The baby weighed 11 lbs. 7½ ozs.

During delivery the mother had received 50 ccs. of a mixture of chloroform and ether, and from the birth of the head she was given pure oxygen by nasal catheter.

Postmortem Examination

Male infant, 11 lbs. 7½ ozs. All organs were normal except for a small subcapsular haematoma of the liver 1 cm. in diameter and a small tentorial tear on the right side with slight subdural haemorrhage over the lower half of the right hemisphere.

Final Diagnosis

Intra-uterine death probably due to anoxia secondary to compression of the cord and impacted shoulders.

Case Reports

Cancer in Otolaryngology

(Three Case Reports of Interest)

Jack A. Rubin, M.D., M.Sc. (Oto.), D.A.B. (Oto.)

The appearance of three unusual and interesting cases of cancer in a short interval of time prompted this article. There is a similarity in two of the cases, although the site of malignancy differs, i.e., 1, external auditory canal, 2, vocal cord of the larynx. In the two cases there was a delay in arriving at the diagnosis because of the treatment of a second minor condition which co-existed at the same site. The cases emphasize the necessity of adequate examination and of thinking of cancer when treating a resistant condition. Only in this way will the cure rate of this lethal disease increase.

Case 1

R. F., 42 year old white male was being treated for a "chronic bronchitis and laryngitis" since 1940. Hoarseness had been present since onset. However, curiously enough, a laryngeal examination had never been advised or done before the patient was referred to me fourteen years after the symptoms appeared. Examination revealed a healthy robust male with no apparent discomfort except for the persistent hoarseness and intermittent cough. Indirect laryngoscopy showed the entire right true cord to be replaced by a hyperkeratotic granular mass. No adenopathy or other abnormality were seen. Direct laryngoscopy and biopsy were done, and pathological report revealed extensive leukoplakia with grade 1 epidermoid cancer. The involved cord was movable. Chest x-ray and blood picture were normal. In view of the patient's occupation (salesman) and the limited extent of the tumor, a laryngofissure was done removing the anterior commissure, the entire right true cord as well as a margin of healthy tissue on all sides of the lesion. Following surgery the patient's voice has remained the same as prior to operation, and no recurrence has been noted to date.

This case has been presented in order to emphasize the necessity of having an adequate laryngeal examination in any patient with persistent hoarseness, especially in those cases in which the symptoms continue in spite of conservative therapy and lasts longer than four weeks. Had this patient been seen earlier a simple endoscopic removal of the lesion might have been adequate. This clinical picture has been repeated often, especially in patients with chronic pulmonary disease, i.e., asthma, bronchitis, where the occurrence of hoarseness is believed due to the chest condition. The dictum of "all that wheezes is not asthma" should be kept in mind and complete endoscopic examination done more often.

Case 2

M. O., 61 year old female was complaining of a persistent right ear discharge following an abrasion to the right external auditory canal. The patient had been seen and treated by several capable doctors for her condition, diagnosed as "external otitis." The aural discharge persisted and when the patient was first seen by me approximately nine months since the onset of symptoms there was a serosanguinous discharge noted coming from the right ear. Examination showed a superficial ulcerated area on the floor of the medial half of the external auditory canal. In view of the chronicity of the condition and suspicious appearance of the lesion, a biopsy was taken. Pathological report indicated a squamous cell carcinoma. The patient refused surgery and was referred for radiation by the Cobalt 60 Beam Therapy. The lesion responded well, and no local recurrence or adenopathy was noted to date.

Once again because of the established diagnosis of infection, the possibility of a second co-existing condition was overlooked. True, this is an unusual site for a malignancy, but if cancer is not thought of and biopsy of suspicious lesions not done, we will keep on missing the early stages of this lethal condition. The appearance of the ulcer, the type of discharge and presence of the symptoms in spite of adequate medical therapy should have been adequate clues for an earlier diagnosis of cancer.

Case 3

J. M., 71 year old white male, first consulted a doctor because of visual disturbance and soreness over the right eye. Apparently these symptoms lasted about seven months before his medical examination. The patient was referred to me because of a slight bulging and tenderness over the upper medial aspect of his right eye involving the supra-orbital region of the frontal bone and the lateral aspect of the glabellar region of the nose. Examination at this time revealed early exopthalmos with slight lateral displacement of the right orbital contents and the above mentioned mass. There was no history of previous sinus disease, and the present deformity was a gradual progressive affair. The only other significant fact was that the mid portion of the right middle turbinate was somewhat granular and bled easily on manipulation. X-rays of sinuses showed destruction of the medial portion of the supra orbital ridge with right frontal and ethmoid cloudiness. An external fronto-ethmoid operation was done with two possibilities in mind, i.e., mucocele or cancer of the sinuses. Pathological examination of the operative specimen showed a "clear cell carcinoma" resembling a hypernephroma. In view of the findings, kidney investigation

was done. The patient denied any genito-urinary symptoms and urinalysis was negative. However, pyelograms revealed a large mass replacing the superior pole of the left kidney. Exploratory operation resulted in the diagnosis (histologically) of hypernephroma. The sections from the sinus lesion and the kidney mass were identical. A "silent" hypernephroma of the left kidney had apparently resulted in a solitary metastasis to the right frontal-ethmoid region. X-rays of chest and all bones were negative for other metastases. Following the sinus operation and removal of the left kidney, the patient received radiation therapy to the right fronto-ethmoid area. Post operative course was uneventful. However, five months later the patient became worse, and x-ray at this time showed destruction in the cervical spine (C4). The patient went rapidly downhill and became comatose and died one week later. Post mortem was unobtainable.

This case is presented because of its rarity. Hypernephroma has a tendency to metastasize to bones, mainly the ribs, spine, long bones, scapula and skull. Spread to the paranasal sinuses is uncommon. The metastases are often mistaken for primary tumor or other diseases of the bones, and the renal tumor is discovered late in the disease or at autopsy. Cure rate in sinus cancer is very low due to the extent and location of the disease at the time of diagnosis. Early diagnosis is essential, and more complete examination must be done in order to discover sinus malignancies in their curable stages.

In conclusion, I wish to emphasize the necessity of making a more thorough examination when a patient presents himself with symptoms referrable to the ear, nose and throat. X-rays of the involved regions and endoscopic examination should be done more often. Biopsy of any suspicious area is always indicated and does not cause the patient much inconvenience. Doctors as well as the layman must be made "Cancer conscious."

Case Report

Carcinoma of the Stomach Diagnosed by Cytology

Marilyn Bondar, B.Sc., and A. J. Glazebrook, M.D.
St. Boniface Hospital

The following case is reported to show that a diagnosis of carcinoma of the stomach may be supplied by cytological methods when the radiological demonstration of the lesion is made difficult or impossible by its situation.

Case Report

A 72 year old woman complained of heartburn, weakness, and anorexia; of approximately six months duration. She had been ordered a diet by her doctor, but a week before admission she ate some fatty foods, which she knew disagreed with her; climbed three flights of stairs after the meal and then vomited undigested food containing blood clots. In spite of this episode, and of her complaint of weakness, she continued working hard about her house, but noticed during the next few days the passage of both bright red and dark red blood streaks on her stools.

She was a difficult old lady to question but further enquiry elicited the fact that she felt pain in the mid-sternal region on eating hard foods, which was referred through to the mid-thoracic region of her back, where it hurt her most acutely. This pain was transient in duration.

On examination she was a pale but surprisingly active woman for her age. There were no definite physical signs, save for the pallor, which was explained by a haemoglobin of only 35%. Her blood sedimentation rate was 117 mm. in the first hour. Her stools contained occult blood. Her gastric analysis revealed achlorhydria. She was given blood transfusions. Her haemoglobin increased to 85% and the sedimentation rate fell to 38 mm. in the first hour.

A barium meal was attempted, with great difficulty, as the patient vomited much of the barium, but sufficient was retained to allow a fair view of the stomach. As far as could be seen, there was no abnormality in the oesophagus stomach or duodenal cap. The examination was repeated, but again no lesion was seen in the upper gastro-intestinal tract.

Gastroscopy was now considered as a diagnosis of malignancy seemed likely, but in view of the probable site of the disease, which from the symptoms was judged to be involving the cardia, cytology studies were ordered instead.

Cytology Report

Gastric aspirations had to be done by means of a nasal tube, owing to the patient's great difficulty in swallowing. The tube was passed down to the cardia, and the washings were processed and stained by Papanicoloau's technique. Clumps of cells were seen having distinct characteristics of malignancy. These consisted of alterations in the cytoplasm-nuclear ratio; prominence of the nucleoli; hyperchromasia; and cytoplasmic vacuolisation. (Plates 1, 2 and 3). Laparotomy was done and the cardiac portion of the stomach resected.

Pathology Report

There is a crater-like ulcer measuring 5 cm. in diameter with hard, raised, necrotic margins. It surrounds the oesophageal orifice, infiltrating the submucosa. Microscopy shows a tumour composed

*Consultant in Gastroenterology, St. Boniface Hospital, and Associate Professor of Physiology and Medical Research, University of Manitoba.

of cuboidal and polyhedral cells arranged in cords and clumps, invading the submucosa of the oesophagus for a distance of 3 mm. The mesenteric lymph nodes contain multiple deposits of metastatic tumour.

Discussion

The tumour site in this case, a ring-like lesion of the stomach surrounding the oesophageal opening; presented formidable difficulties to the Radiologist, which were greatly increased by the trouble the patient had in retaining the barium meal. Gastroscopic demonstration of a tumour in this position is equally limited by anatomical considerations. Diagnosis by either of these methods was virtually impossible.

Plate 1

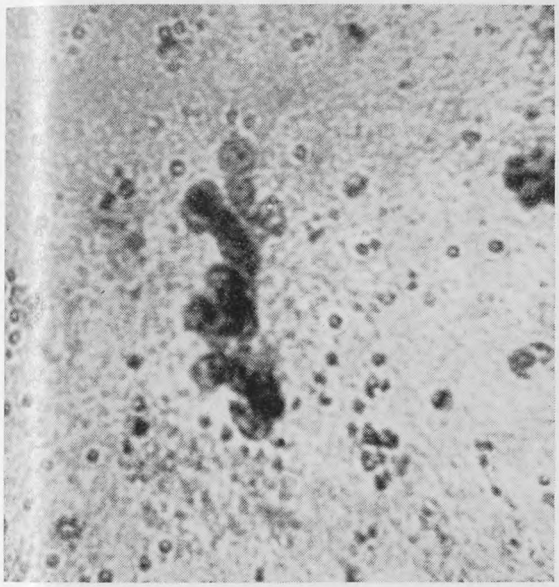
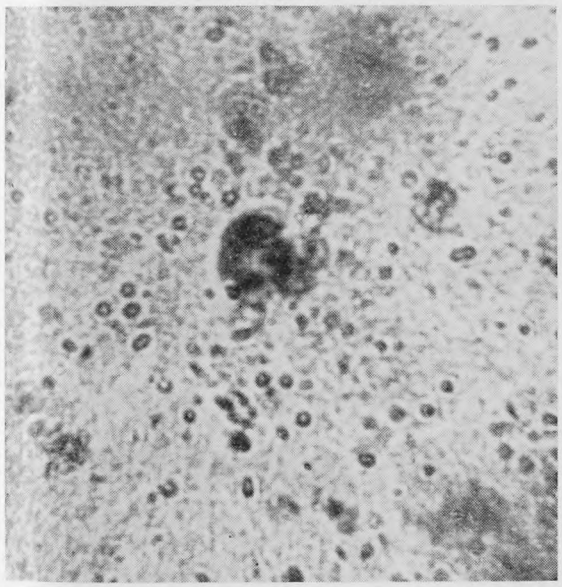


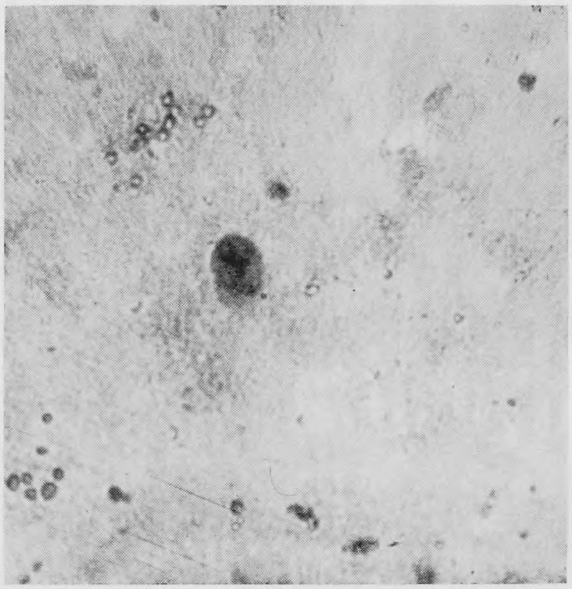
Plate 2



The advantages of the technique of exfoliative cytology, which allows the entire area of the stomach to be searched for tumour cells, irrespective of their anatomical origin within the organ, are shown by the experience. Exfoliative cytology is also of great value in very early lesions which have not caused sufficient structural change to give definite radiological shadows,andwhich may also lie within "blind areas" and frustrate the gastroscopist. Thus it is a useful adjunct to the well-proved methods, but is in no sense a competitor.

We are especially anxious to report this case, because we are striving to improve our methods of exfoliative cytology, to make them easier and more acceptable to the patient. We cannot progress until greater numbers of patients are referred to the Cytology Department for study.

Plate 3



Summary

An example of cancer of the stomach occurring in a site offering great difficulties to radiological or gastroscopic investigation is reported in which the diagnosis was made by cytological studies.

Plates 1 and 2

Clumps of malignant cells. The nucleii are hyperchromatic. The nucleoli are prominent. There is variation in nuclear size. The normal nuclear cytoplasmic ratio is grossly disturbed.

Plate 3

Two overlapping malignant cells. Hyperchromasia and prominent nucleoli are present and the nuclear-cytoplasmic ratio is greatly disturbed.

Acknowledgment

We are grateful to Dr. Papanicoloau for having our slides examined in his Laboratory confirming the diagnosis of malignancy.

1950 Cortone* | 1952 Hydrocortone* | 1954 Alflorone* | 1955 Deltra*

the delta$_1$ analogue of hydrocortisone

'Hydeltra'*

(Prednisolone Merck) **tablets**

2.5 mg.-5 mg.

(scored)

'Hydeltra' | **Indications:** RHEUMATOID ARTHRITIS
BRONCHIAL ASTHMA
INFLAMMATORY SKIN CONDITIONS

'Hydeltra' offers increased clinical effectiveness . . . lowers the incidence of untoward hormonal effects.

'Hydeltra' is supplied as 2.5 mg. and 5 mg. scored tablets in bottles of 30 and 100.

SHARP & DOHME

TORONTO 16, ONT.
DIVISION OF MERCK & CO. LIMITED

*Trade Mark

Editorial

S. Vaisrub, M.D., M.R.C.P. (Lond.), F.R.C.P. (C.), F.A.C.P., Editor

Rehabilitation

To many of us Rehabilitation connotes something that is vaguely connected with Physiotherapy and Social Service. It conjures pictures of eager viragos pummelling the wasted muscles of ancient invalids, or harassed office clerks trying to get a placement for disabled veterans. The broader implications of Rehabilitation escape us.

Papers by T. E. Hunt and J. G. Pincock (published in this issue) will help to dispel any misconceptions we may have about this important subject. Far from being the province of a few interested specialists, it emerges as one of the main objectives of all good medicine, for its purpose is restoration to physical fitness and social adjustment. It concerns general practitioners, physicians, surgeons, specialists in physical medicine, psychiatrists, nurses, physiotherapists, speech therapists, vocational counsellors and social workers. It involves work assessment, physical restoration, guidance in job placement, vocational training and aid in regaining usefulness and self respect.

Less dramatic and glamorous than diagnosis and treatment, it is none the less a very important phase in medicine, often referred to as the third phase.

Ed.

The Annual Meeting — 1955

The Annual Meeting of the Manitoba Medical Association is about to begin amidst great fanfare and the sound of trumpets. Its programme will be rich, varied, and interesting. The papers to be presented will be outstanding, the discussions stimulating, the speakers spell binding. The attendance, of course, will exceed all records.

May the Editor be forgiven for the above cliches and time worn generalities. After all, that is what is expected of him. Unlike Balaam he starts out with intentions that are praise-laden, if not praiseworthy.

Like all annual events recurring with the regularity of the seasons, the Annual Meeting of the Manitoba Medical Association is beginning to be regarded by its members as an event partaking of the mysterious qualities of all rhythmic phenomena. Its inevitability is taken for granted. It apparently requires no effort and no preparation. Like a sturdy perennial, it grows without care and attention.

Anyone, who ever served on a program committee of the Annual Meeting, and ended up receiving electroshock therapy, will read these lines with a bitter laugh or a shudder of disgust, for he, if no one else, knows how difficult it is to arrange, organize, and ensure the success of this event. The time and effort that go into the planning of programs, invitation of speakers and arrangement of panels and discussions can only be guessed at by those on the outside. Nor is the selection of papers, necessitating, as it does, rejection as well as acceptance, conducive to one's peace of mind. Not unlike the Editorial Board, the Committee for Arrangements influences people without necessarily winning friends.

In this travail, during the harrassing hours of preparation, the planners are sustained by the anticipation of a successful meeting. They know that the latter is not entirely a matter of good papers and good attendance, but also that of the spirit of active and enthusiastic participation. They hope to see the guests arrive not as sightseers to a fair, but as pilgrims to a shrine. Only then will the organizers feel that their efforts have been well rewarded. Don't let them down!

—Ed.

American Medical Association's Public Relations Roundup

Under the able leadership of Leo E. Brown, Director of the American Medical Association Department of Public Relations, about 300 representatives from many states met in the Drake Hotel, Chicago, to discuss projects in the public relations field. About one-third of those present were doctors and the rest were lay people.

The first problem was in the field of legislation. Out of 11,168 bills introduced, 362 were of medical interest and had to be analyzed to study what effect they would have on the medical profession. Then the physicians and the public had to be educated in order that they might understand the full implication of the important bills. Press releases were issued from time to time and special reports were prepared in addition to the quarterly legislative review. Every effort was made to inform the members of the medical profession on these matters.

When the problem of planning ahead for better public relations was discussed, it was agreed that you cannot buy good will if the climate is not right in the first place. A long-range goal up to ten years, and a short-range goal of one year, were planned with the realization that objectives must be clearly defined and a plan for the unexpected. "Public relations is like tea—its strength appears when it is in hot water." Facts must be tied up, measures must be taken to prevent troubles from arising; stimulants must be provided to jog man

or beast, and finally a show of strength is sometimes necessary.

In small communities people look up to the doctor as they do to the minister. Hospitals are encroaching on the private physician. One type of case, namely the Salk Vaccine, was of the fire-alarm type and this threatened to become a hot political issue as far as the doctors were concerned, but as a result of good public relations the profession lost no prestige. In all planning it was felt that physicians should be on the ground floor and will therefore be working under their own plan. The schools should teach the art of medicine as well as the science of medicine. "Public relations does not begin and end in the doctor's office", and therefore it is like a commodity that must be sold to the public by mass coverage. It is not enough to know that doctors are doing a reasonably good job but the public must be so informed.

James E. Bryan emphasized that the Golden Rule was a good yardstick to follow and that we must not philosophize to the extent that we think we can talk or trick ourselves out of trouble. It is important to be frank with the public even though what we have to say might appear to be obnoxious or even cause trouble.

"Persuasion is the technique of social progress" and public relations is a social attitude. Sincerity is important and it is important that it can be proved to the doctor "that he can be as the image the doctor has of himself". Too often the doctor is unable to put himself into the position of the patient to understand the other fellow.

There are three categories under which the doctor works: 1) the domain of positive law, 2) the domain of free choice, and 3) the domain to the obedience of the unenforceable. Medicine operates largely in this last category. Sometimes there are misunderstandings between doctor and patient and then Grievance Committees attempt to settle these points of differences and in this respect try to correct the "Violence that has been done to the image of the true doctor".

Television is becoming of increasing importance in the field of public relations. A new series of programs under the titles "Medic", "March of Medicine", and "Medical Horizons" were discussed by origination-script writers and other competent authorities.

All the arrangements for the meeting were competently handled by the American Medical Association through their Public Relations representatives.

L. A. Sigurdson, M.D.

Obituary

Dr. John Henry Conklin

Dr. John Henry Conklin died on August 5, aged 79. He came from Ontario to Manitoba in 1885 and received his education in Winnipeg schools, the University of Manitoba and Manitoba Medical College. Before entering the study of medicine he taught for seven years including three as principal of Melita school. From 1910 to 1946 he practised in St. James and took an active part in the life of the community. For 25 years he was a member of the school board, for six years a member of St. James municipal council, past master of the Masonic lodge and clerk of session of St. James United Church. He is survived by his widow, two daughters and two sons.

Letter to the Editor

Dear Editor:

I have been following with considerable interest the verbal calisthenics and intellectual gyrations of your editorials. What impressed me most is the agility with which you manage to jump on every bandwagon that happens to be passing by. This adroitness was particularly noticeable in your editorial on Public Relations in the August - September issue of the Review. Dealing with a subject widely discussed and commented upon in almost all the leading medical journals on this continent, you do not deviate one iota from the stereotyped, standardized, conventional point of view, that it is up to the medical profession to put its best foot forward in attempting to establish good public relations. According to this concept, it is the duty of the physicians, as well as that of their representative bodies, to educate the public with regard to the problems and difficulties of medical practice, in order to endear themselves to the hearts of their patients.

Did it ever occur to you that the shoe may be on the other foot? That amidst all the talk about the need for acquainting the public with the doctor, it is high time someone pointed out the necessity for acquainting the doctor with the public. If the patient no longer recognizes in the modern physician the likeness of the kindly and benevolent horse and buggy doctor, it is even less likely that the physician sees in many of his patients the image of the grateful and adoring recipient of advice and treatment that he foresaw when he took the Hippocratic oath. Indeed, there is a crying need for a study of the patient as he is, and not as he is visualized by wishful thinkers, a study which concerns itself neither with habitus and constitution, nor with psychological make up, but solely with patient pattern types (p.p.t.) insofar as they effect the life of the doctor.

Allow me, then, dear Editor, to sketch briefly without going into too much detail, a few familiar patient-pattern types.

First, let me point out to you the nocturnalist or nocturnist, (either term is admissible). You will recognize him as the man who wakes you in the night for some trivial complaint. For reasons unknown, he abhors the sight of you by day, preferring to gaze at your pasty, pale face in the dim nocturnal illumination. He also has an unfathomable preference for stormy, rainy, or blizzardy nights, and an uncanny knack for picking the time when your vitality is at its lowest. No psychoanalyst to date has an adequate explanation for this peculiar behaviour.

Closely allied to the Nocturnalist is the Alarmist. Unlike the former, however, he does not discriminate against daylight. He will call at any hour, but has a preference for the busy afternoon period, when the waiting room is crammed full of patients. His is always a case of emergency, be it a cold or an ingrown toe-nail. To preclude any chance of your getting away with mere advice over the telephone, he himself seldom calls, delegating the duty to a solicitous neighbor. Despite your firm resolve of "never again", you find yourself rushing out in a flurry, bag in hand, on another wild goose chase.

A kindred spirit to the above, even though less vexatious, is the telephonophile, or telephonomaniac. His is the fondness for lengthy and frequent telephone conversations. He inquires, informs, and consults at all hours of the day. Morning hospital rounds, afternoon office hours, the late dinner at home, the evening's quiet pleasures, the night's deep slumber — none are free from the threat of the "voice". I can still recall the patient who, after an excited call at 2 a.m. inquiring about the technique of an enema, telephoned again at 4 a.m. the joyous tidings of a successful result.

The above are the patient-pattern types that invade our home lives from "outer space", so to speak. What about the sanctum of our office? Here indeed we are dealing with a wide variety of interesting patient-pattern types that make Medicine not only a science and an art, but also a study in Lifemanship. Allow me to introduce you to some of them.

Right in the forefront is seated the species Interrogationist genus Conversationalist. He is a chatty individual who is fond of asking questions. The latter range from innocent why's and wherefore's of his symptoms to queries about ultimate causes and the Absolute. At times the questions border on the inquisitorial third degree. Some are real tripper-uppers. Beware of him, for he is up to date on his latest Digest, while you are still lagging behind in the shadow of the last month's M. M. Review.

Another species of the genus Conversationalist is the Circumstantialist. A prize time waster, he is a familiar figure in your office. It is futile to ask him anything, for his answers are as long as they are involved, and as confusing as they are unrelated to your question. The best description of him to date has been given by Alvarez in his paper (Gastro-Enterology, Jan. 1951) "On the Joys of Taking a History".

A type opposite to the above in his technique of exasperation is the Tactiturnist. Stony silence, a curt nod, or a laconic reply meets every attempt on your part to elicit an intelligent answer to your query. He lets you fuss and fret and get hot under the collar, while he preserves the cool dignity of silence. The only time he relents is after the completion of your examination, when he volunteers a vital bit of information which necessitates a return to the examining room and a re-examination. The basis of the strange behaviour of the Tactiturnish often lies in his love of machinery. A Machinophile at heart, he respects electrocardiographic, radiologic and laboratory investigations, and disdains the medical history which to him seems to be a waste of time. He also has very little respect for the ordinary physical examination, displaying interest only when an ophthalmoscope or auroscope or some other mechanical gadget is being used.

I could go on for hours, dear Editor, talking about a score of other patient-pattern types; I could speak of the Consultationist, the Wandering Minstrel of Medicine who travels from one consultant to another singing his tale of woe; I could talk about the Belittler, and the Hero-worshipper, the Patronizer, and the Criticizer, the "Damn with faint praiser" and the oblique Complimenter, the Philosophiser, the Attention Seeker, the Quibbler and the "Regular check-up" boy — I could, and I would were it not for the fact that this is not a scientific paper, but a mere letter from a recalcitrant reader.

I would like, however, to single out for dishonorable mention one more type — not a patient-pattern type, for he is not necessarily your patient, but a representative of the public at large. He is the man, who greets you with the hearty "Keeping you busy, Doc?" Anybody know a good answer?

Yours very truly,

M. Y. Alterego.

Social News

Reported by K. Borthwick-Leslie, M.D.

Have you ever, with a slave driver like Gordon, Business Manager, on your trail, gone through a whole month's papers, Press and Tribune, etc., which you have only had time to skim headlines?

It's now 3 a.m., the Review has been "on the press" for more than a week, due to pressure of ye coming convention, so perforce comes your gossip column.

The bilge first, most fascinating headlines when taken at one full night's swoop, a few for instance:

Male Sex or "Draft Dodgery" report from Seoul's Red Cross Hospital — A new and more forceful start on plastic surgery.

"This is how Billy Grows"—Poor Billy, he only has a nurse, housekeeper, and umpteen consulting Paediatricians to help him grow.

Eric Nicol and bride sail on honeymoon to Fiji, etc., where "Myrl" is supposed to dive for pennies to pay for trip. What a blow . . . my suppressed literary fascination and he up and marries a gal—good looking too — who can dive. That's life. Maybe there will be a good old cartwheel somewhere on the bottom which she cannot resist, and he'll come back alone and broke. A common bond, who knows?

Calcium deficiency in Vancouver, Chief Mulligan frowns on patrolmen drinking milk—tish, tish.

She's on her own. Do or die, says Kathie McIntosh. What's more, she did. More power to her. If you're curious, ask my pal Johnson in Gimli, but be prepared for the blast.

"Borers Menace Corn Crop". How true. Have you ever tried tossing about corny jokes and be interrupted or ignored by the "borers"?

"Bosoms Back Says Dior" — what a boon for bosoms, for Merkeley and Pickard or the foam rubber industry. What about it boys, will M.M.S. favor foam rubber?

Those delightful reducing diets, recipes for pickles, etc., and the fascinating battle between Dr. Rex Morgan and the "lady" interne Dr. Leacock. How is one to be expected to catch up on 'em all and write serious gossip, alone with a stastical personal week-end?

Two funerals (one my stastics) one wedding, two births, and one abortion—not mine—ordinary calls, return of one son, after a summer in the C.O.T.C., and umpteen pals.

Seriously speaking, here we go:

♦

Sincere congratulations to Dr. Maxwell Bowman, provincial director of preventive medical services, who has been honored as a Fellow of the newly established American College of Preventive Medicine, in recognition of his excellent work in this field.

♦

This welcome is long overdue, but my official card arrived not long ago.

The Manitoba Clinic announces that Lawrence L. Whytehead, B.M., B.Ch. (Oxon)) F.R.C.S. (Eng) recently Consulting Surgeon, South East Metropolitan Regional Hospital Board, London, England, has joined the Clinic. His specialty, Thoracic and Cardiac Surgery.

♦

Dr. and Mrs. Beatty Ramsay and son, Santa Monica, Cal. were summer guests of Mr. and Mrs. Robert Ramsay.

One of the nicest compliments from my old friend Georgie Wilcox, Artist, leaving Winnipeg to live in Peterborough, Ont. Quote in part, "Dr. W. J. Hart, Fred Whiteley and young Peter Wengel gave me more than I gave them". Take a bow Dr. Hart and Peter.

♦

Bigger and better nautical ribbons to our local hero Gordon Fahrni, for his spectacular rescue of the boys last week from the perils of the Assiniboine, much to the detriment of both his boat and floors. Understand that the rescuees, particularly Dr. W. Taylor's only regret is that if he had known they were on a reef, he could have had access to Gordie's "Scotch Cellar" at least half an hour earlier with that much less cyanosis. Understand there was no serious aftermath which is most fortunate; that river has some mighty dirty tricks up its sleeve, but with the Navy on the alert, who cares?

♦

August 2nd — Barbara M. Henderson became the bride of Dr. Peter Suderman. Mrs. Suderman is a 1954 graduate in nursing of the W.G.H. Dr. Suderman is a graduate (1950) of the faculty of Medicine, Goettingen, Germany. The young couple will reside in Winnipeg.

♦

Sept. 8th — Dr. and Mrs. Wm. G. Rutherford acquired a nw daughter, when their son Garth Lees married Rilla Jane Reed, in Westminster Church.

The young couple will reside in Brockville, Ont.

♦

In St. Luke's Church, Winnipeg, August 27th, Jean E. Holditch of Boissevain became the bride of Gordon Eden Boyd, son of Mrs. Frank Boyd and the late Dr. Frank Boyd. The bride is a graduate of the U. of M. in Interior Design; the groom a fourth year Medical student, Manitoba.

♦

Locally the stork has been negligent, but Dr. and Mrs. J. L. Asseltine of Fort Garry announce the arrival of Margit Ellen, sister for Norman, Karey and Lionel.

♦

Dr. and Mrs. C. F. Benoit happily announce the birth of Albert Glenn, August 18th.

♦

Dr. and Mrs. E. Clark, Morden, Man. announce the arrival of James Michael, brother for Paul.

♦

Dr. and Mrs. W. Shaver, Fergus Falls, Minnesota, tell us that Robert Stewart arrived safely, to ante up the hockey team so far consisting of Jimmy, Bruce and Rodger. What has happened to those chromosomes?

♦

Dr. and Mrs. Gordon Skinner, Fudge Drive, No. 4, Xenia, Ohio, welcome Ellen Amy, sister for Jane.

♦

Dr. and Mrs. Terry Lalor (nee Eileen St. Mars) announce the arrival of Nancy Louise, Sept. 6th at Kelowna, B.C. Nancy is to be the junior pest for brother Joe.

♦

Dr. and Mrs. Earl Bryngelson, Kenora, Ont., announce the birth of Karen Sylvia, August 5th.

♦

Dr. and Mrs. R. D. Sproul (nee Eleanor Bridges) are very happy to let the world know that Janice Loreen arrived July 25th, at the Royal Victoria Hospital, Montreal.

College of Physicians and Surgeons of Manitoba

Council Meeting (Cont.)

Registration Committee

April 5, 1955.

Enabling Certificate Deferred

Ramnarine Jaggernauth, M.D., Howard U., 1954.

Enabling Certificates Granted

Julius Adolf Blanck, M.D., Dorpat U., 1927.

King Tieng Chung, M.D., U. California, 1951.

Alexander Frederick Ferre, M.D., Voronezh Medical Institute, 1941.

Gerhart Heinisch, M.D., U. Vienna, 1949.

Wolfgang Ernst Hirte, M.D., Christian Albrecht U., Kiel, 1945.

Norbert Schnelle, M.D., Johannes Gutenberg U., Mainz, 1951.

William Singer, M.D., Leopold Franzens U., Innsbruck, 1947.

Johann Martin Stiglmayr, M.D., Julius-Maximilians U., Wurzburg, 1929.

Herberts Kristaps Goba, M.D., Hamburg U., 1947.

Certificates of Registration Granted

Ian Ivor Maynard MacGregor, L. R. C. P., Edinburgh, 1951; L.R.C.S., Edinburgh, 1951; L.R.F.P.S., Glasgow, 1951.

Thomas Joseph MacCaughey, M.B., B.Ch., National U. of Ireland, 1950; D.A., R.C.P.S., London, 1954.

George Neilson, M.B., Ch.B., U. Glasgow, 1952.

◆

Executive Committee

March 8th, 1955.

A meeting of the Executive Committee was held in the Board Room, Medical College, Winnipeg, on Tuesday, March 8, 1955, at 8.00 p.m.

Present: Dr. C. B. Stewart, Chairman, Dr. Ed. Johnson, Dr. G. H. Hamlin, Dr. M. R. MacCharles, Dr. F. P. Doyle, Dr. C. H. A. Walton, President ex-officio, and Dr. M. T. Macfarland, Registrar.

1. Approval of Minutes.

Motion: "THAT the minutes of the Executive Committee Meetings held November 24, 1954 and January 11, 1955 be taken as read." Carried.

2. Business Arising from Executive Committee Meeting, January 11, 1955.

A. Request from Faculty of Medicine, re Employing Medical Artist

At the meeting held January 11th, the Executive Committee passed a motion granting the sum of Five Hundred Dollars ($500.00) to the University of Manitoba towards the expense involved in setting up facilities for a medical artist when sufficient funds are on hand and the medical artist actually secured, with the understanding the grant would be for the initial year only.

The Registrar presented a communication from the Faculty of Medicine advising that it was expected that the Medical Artist would arrive in Winnipeg about March 1, 1955, and that the cheque should be made payable to the University of Manitoba. The Registrar replied that when the medical artist arrived the cheque would be issued.

B. Communication from the Chairman, Qualifications Committee, Medical Council of Canada.

The Registrar advised he had communicated with the Chairman, Education Committee outlining the various items for consideration by the Committee, but to date had received no reply. It was stressed that it was necessary to have a meeting of this Committee prior to the May meeting of Council so that the representatives to the Medical Council of Canada may receive instructions from Council.

C. Question of Rebating Part of Enabling Certificate Fee

At the meeting held January 11th, the Executive Committee passed a motion that the rebate of Twenty Dollars ($20.00) from the Enabling Certificate fee be not credited towards the registration fee of applicants who register but do not intend to practise in Manitoba. The Registrar pointed out that since this would necessitate a change in the By-Laws of the College, a notice of motion would be required. It was agreed that Dr. A. R. Birt, who is a member of the Registration Committee, should bring in a notice of motion at the May Council meeting, with retroactive dating.

D. Cancer Relief and Research Institute

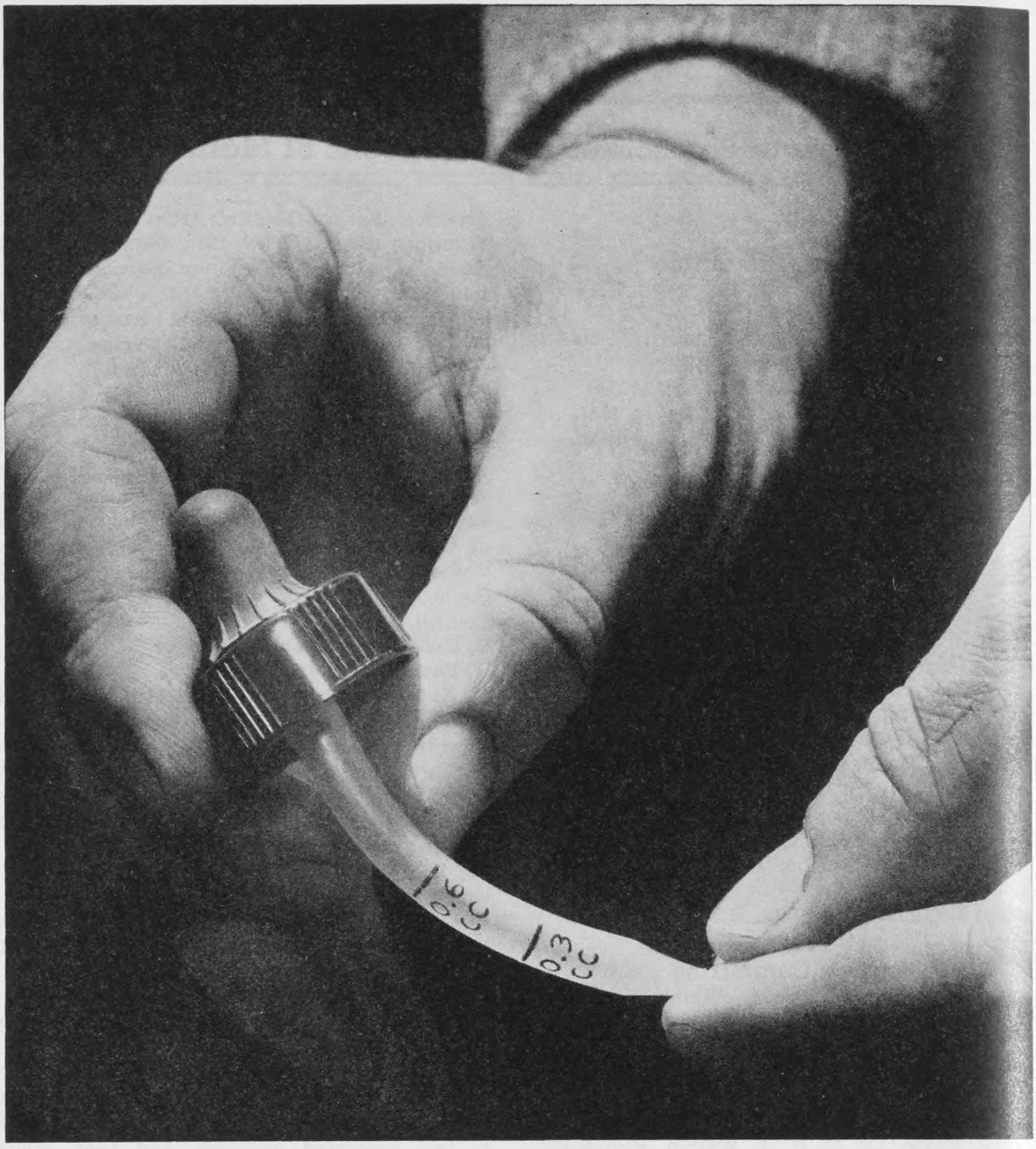
At the meeting held January 11th, the Registrar was instructed to contact the Deputy Minister of Health to see if the communication from the College concerning changing the representation to the Cancer Institute from the President and Registrar to two appointed members, had been brought forward.

The Registrar presented a reply from the Minister of Health and Public Welfare advising he would be unable to bring an amendment to the Cancer Relief Act to the present session, but would consider the suggested amendment between now and the next session. The Registrar was instructed to bring the correspondence forward after the October meeting of Council, before the next session of Parliament.

E. Interneship Requirement in Ontario

The Registrar reported that since the January 11th meeting when this matter was discussed, he had received a communication from the Registrar, C.P. & S., Saskatchewan, quoting the following portion of a letter he had received from the Registrar, C.P. & S., Ontario:

"So far as our regulations are concerned you are quite correct that after 1959 it will be necessary



ANOTHER MEAD JOHNSON "FIRST"

To make administration of infant vitamin supplements directly into the mouth perfectly safe . . . to eliminate the possibility of breaking or chipping . . . Mead originated the calibrated, unbreakable plastic 'Safti-Dropper'.

Now your patients are not only assured of superior vitamin supplements when you specify Poly-Vi-Sol, Tri-Vi-Sol, Fer-In-Sol and Ce-Vi-Sol . . . but they also benefit from greater safety and convenience.

Another Mead first in modern packaging and product improvement

MEAD

MEAD JOHNSON & COMPANY OF CANADA LIMITED

TORONTO • BELLEVILLE

for all alien physicians applying for registration to have completed the full requirements of Canadian Citizenship, and before their application for an enabling certificate can be considered they must have spent at least two years interneship in an approved hospital in Ontario, and have successfully passed the examinations in Medical English and the basic Sciences (Anatomy, Physiology, Biochemistry, Pathology and Bacteriology as well as Pharmacology)".

The Registrar also presented a copy of letter from the Registrar, C.P. & S., British Columbia, to the Registrar, C.P. & S., Ontario, requesting additional information. It was pointed out that the western provinces would probably get the overflow of applications from Ontario, as well as Quebec which requires Canadian citizenship. The question will be discussed at the meeting of the Registrars in June.

3. New Business.

A. Medical Council of Canada Requiring Certificate of One Year Interneship Before Issuance of L.M.C.C.

The Registrar stated that the Medical Council of Canada now requires a certificate of one year's general interneship before granting the L.M.C.C., and he had written the Registrar inquiring whether it would be required from Manitoba graduates since they must complete an undergraduate year before graduation. He received the reply: ". . . since the University of Manitoba men do their hospital year before graduation, it is obviously superfluous to ask them for an interneship certificate." For information.

B. Meeting of Registrars in Toronto, June 22, 1955.

The Registrar reported that during the combined meeting of the British Medical Association, Canadian Medical Association, and Ontario Medical Association, a meeting of the Registrars had been arranged for June 22, 1955 at 2.00 p.m.

Motion: "THAT the Registrar be authorized to attend the meeting of the Registrars in Toronto in June, to be held in conjunction with the combined meeting of the British Medical Association, Canadian Medical Association, and Ontario Medical Association, the expenses to be paid by the College of Physicians and Surgeons of Manitoba." Carried.

C. Communication from Defence Medical and Dental Services Advisory Board

At the Registrars' meeting in June, 1954, the Registrar was nominated to represent the Registrars of the various licensing bodies across Canada on the Defence Medical and Dental Services Advisory Board. A confidential communication was presented from the Executive Secretary of DMDSAB, advising that it has now become possible to submit the proposed amendments to the Order in Council governing the Board for consideration by the authorities concerned, because of difficulties encountered in obtaining formal ratification by 3 of the 10 Registration authorities. If and when the amended Order in Council receives assent, the Registrar will be advised.

D. Inquiry re Fee of .....

The Registrar presented a communication from Dr. ....., enclosing an itemized statement which had been objected to and requesting the Taxing Committee to tax it. The Registrar advised that matters of this kind usually come from the objector and are not referred to the Taxing Committee except by order of the Executive Committee. The Committee considered that Mr. ..... should be the one to request the Taxing Committee to consider the statement, outlining his objection and the basis of objection.

Motion: "THAT Dr. ..... be advised to inform Mr. ..... that if there is any complaint concerning the account, he should communicate with the Registrar to have it referred to the Taxing Committee." Carried.

E. Communication from Workmen's Compensation Board re Dr. .....

The Registrar read a copy of a communication addressed to the Workmen's Compensation Board by Dr. ..... concerning the claim of one of his patients, and a copy of the reply from the W.C.B., which had been forwarded to the College for information.

Motion: "THAT the correspondence between Dr. ..... and the Workmen's Compensation Board be tabled." Carried.

F. Claritone Agency

The Registrar explained that the Better Business Bureau had brought the advertisement of Claritone to his attention. He presented the advertisements from the local papers and a booklet distributed by the Claritone Sales Co. Ltd., Vancouver, in which the word "therapy" is used, and correspondence he had with the Claritone Agency, Winnipeg, and the College of Physicians and Surgeons of British Columbia. The Committee felt that the Registrar had gone as far as the College need to go.

G. Communication from Manitoba Medical Association re Hiring a Public Relations Consultant

The Registrar presented a communication from the Chairman, Public Relations Committee, Manitoba Medical Association, advising that the Executive had discussed the question of hiring a Public Relations Consultant on a part time basis, and that the four bodies most vitally interested in such a matter would be the Manitoba Medical Service, the College of Physicians and Surgeons, the Manitoba Medical Association, and the Winnipeg Medical Society. The Public Relations Committee of the Manitoba Medical Association,

and the Winnipeg Medical Society, are of the opinion that some co-ordinated effort could be undertaken in this field, and requested the views of Council of the College of Physicians and Surgeons.

The Chairman reported that a public relations consultant had been approached with a view of determining in what way he would be of value to the medical profession and to establish the cost to the profession. The consultant was first quite satisfied that such a service would be of value to the profession. No definite cost was set but it was estimated $200.00 per month ratio. The M.M.S. was approached to pay $100.00 of this amount but the Board refused. There is a wide diversity of opinion of the Executive of the Association.

During discussion it was suggested that public relations was something which had to be established in each physician's day to day work with the public. It was also pointed out that this should be looked into very closely since it could work exactly the opposite way if advice received from someone unfamiliar with medical ethics is bad and done poorly, and could do a lot of harm. The Committee agreed they would be more in favour of giving some thought to assisting Dr. ..... in his work than bringing in someone who is unfamiliar with professional standards.

Motion: "THAT the Executive Committee are sympathetic to the work and difficulties of the Public Relations Committee of the Manitoba Medical Association, under the Chairmanship of Dr. ....., but are reluctant to recommend to Council at the time the hiring of a non-medical public relations consultant, and suggested there might be other ways in which the College might assist the Public Relations Committee. Carried.

H. Communication from the Manitoba Pharmaceutical Association re "Clindex"

The Registrar advised a communication from the Manitoba Pharmaceutical Association had been received addressed to the Registrar, Manitoba Medical Association, and referred from the Executive of the Association to the College of Physicians and Surgeons. The letter enclosed a report from an inspector of the Manitoba Pharmaceutical Association outlining the use by the ..... of coded prescriptions which could not be filled by any pharmacist outside the ..... . A certified copy of a trade mark, as of the tenth day of August, 1951, and recorded on the sixth day of March, 1952, was presented, which outlined the uses of "Clindex."

The Registrar reported he had communicated with Dr. ..... and had received a reply in which he states "in view of this complaint, as of March 1, 1955 the doctors of our group have discontinued writing prescriptions for the 'stock preparations' carried by the ....."

Motion: "THAT the ..... be requested to clarify item 8 of their letter, that they will not in the future issue any non-recognized coded prescriptions, and when this clarification is received, the Manitoba Pharmaceutical Association be notified that the complaint has been rectified and a copy forwarded to the ..... Carried.

I. Pending Legislation

The Registrar advised that a Bill to amend The Pharmaceutical Act was before the Legislature and that one representative from the Winnipeg Medical Society, The Manitoba Medical Association, and the College of Physicians to the Committee of Fifteen, met with the solicitor on March 2nd to consider any amendment which might concern the medical profession, and submitted the solicitor's notes. (Copy of the solicitor's notes on file).

The Executive Committee discussed the following sections of the Bill briefly:

Section 30 and 32 which amend Section 24 of the Act,

Section 51 which amends Section 36 of the Act, and

Section 54 which amends Section 39 of the Act.

The Executive agreed that the solicitor should take the above points up with the solicitor for the Pharmaceutical Association, and attend the Law Amendments Committee to represent the wishes of the Committee of Fifteen.

Motion: "THAT the College legal advisor be instructed to attend the Law Amendments Committee." Carried.

J. Re Cancellation of Cheque Returned from .....

The Registrar advised that cheque No. 920, dated September 24, 1953, had been issued to ..... as refund of his Enabling Certificate fee, but that he had returned the cheque and it had been carried on the books as an outstanding cheque since that time.

Motion: "THAT the Registrar be instructed to consult with the auditors concerning the outstanding cheque which was issued to ....." Carried.

K. Investigation of College Seal by College of Arms, London

The Registrar advised that during the time an attempt had been made to discover the origin of the College seal in 1954, the following communication had come to the office through Dr. ....., from the College of Arms, London, England:

"Thank you for your letter of the 12th of April, and the enclosed impression of the Seal of the College of Physicians and Surgeons of Manitoba.

"It is the work of the College to design and register Armorial Bearings and if this were an Armorial Seal, the design on it should be registered here. In fact, however, it is a nonarmorial seal and so will not be registered. I could, however,

if you would care to send the fee of £1.1.-, investigate the probable symbolism and let you have a report of anything I am able to find.

"If it is the wish of the College of Physicians and Surgeons of Manitoba to obtain a Grant of Armorial Bearings, as many similar Bodies have done, I shall be happy to advise them how to proceed."

Motion: "THAT the Registrar be authorized to communicate with the College of Arms concerning the College seal." Carried.

L. Printing of Specialist Register

The Registrar stated that the Specialist Register was being compiled for printing and inquired whether the Medical Register should be published in the same register.

Motion: "THAT the Medical Register and the Specialist Register be printed in the one publication." Carried.

M. Date of May Council Meeting

Motion: "THAT the May meeting of Council be held at 9.00 a.m., on Wednesday, May 18th, 1955, in the Board Room, Medical Service Building." Carried.

Adjournment: 10.30 p.m.

Poliomyelitis Vaccine (Salk)

Maxwell Bowman, M.D., D.P.H.
Director of Preventive Medical Services

We in the Department of Health and Public Welfare thought that the Medical Profession in Manitoba would be interested in what has been done with Salk vaccine in Manitoba and what the plans may be for the future, this therefore is an interim report.

In 1954 our thirteen health units and the Winkler area took part in the Field Trials conducted by the National Foundation for Infantile Paralysis. In this trial one half of the children were given vaccine and one half were given "placebo" or "control material" which was similar to the vaccine in all ways excepting that it did not contain any killed virus. No one giving the doses knew whether he was giving vaccine or placebo until Dr. Francis' report was issued in April of this year. Of the 6,737 children who received the first dose 5,851 completed the three dose series. The first two doses were given one week apart and the third dose was given four weeks after the second. Blood samples were taken from about 4% before vaccination, after vaccination, and again later. As not one case of poliomyelitis occurred in a vaccinated child in Manitoba, whether he received vaccine or placebo, we learned very little excepting the laboratory results from the blood samples.

The overall experiment in the U. S. A. and Canada, as reported by Dr. Thomas Francis, Jr., did show the vaccine was of value. Protection against Type I (Brunhilde—the type common to Manitoba) was somewhat in the order of 60%; and against Types II and III (Lansing and Leon) a little over 80%. One point emphasized was that when a vaccinated child did develop polio he was not nearly so apt to develop severe paralysis. This report together with added information from Dr. Jonas E. Salk made it appear well worth while to carry out a vaccination program in Canada, especially as very few reactions had been noted and no infections.

In Canada we were most fortunate as the Connaught Medical Research Laboratories, University of Toronto, had in 1954 cultured and grown large amounts of the three viruses used in making the vaccine for the Field Trials, and with the aid of Federal Health Grants, had continued to grow virus and make it into vaccine. This meant that by April of 1955 sufficient vaccine was available in Canada to give two doses of vaccine to almost one million children—Manitoba's share on a per capita basis was sufficient for a little over 54,000. Dr. Salk had, in the meantime, revised his schedule of dosage and recommended that two doses be given at two to four week intervals and a third dose, somewhat in the nature of a booster dose, be given **not earlier** than seven months after the second dose and probably about one year later. In Manitoba it was decided to use the four week interval between first and second doses and boosters next spring. As the amount of vaccine available was sufficient for only a three year age group, and greatest susceptibility is in the 5, 6, 7, 8, 9 year group, it was agreed in Manitoba to do the 6, 7 and 8 year group (grades 1, 2 and 3) as they were mostly in school and therefore easily accessible. In the City of Winnipeg they chose the kindergarten and Grades 1 and 2 group.

Certain rules were laid down regarding the administration:

(1) No child to receive Salk vaccine unless the Medical Health Officer had the parents' written consent.

(2) Vaccine to be administered only by licensed physicians.

(3) Records to be kept of dates and doses given, type and lot numbers of vaccine, physician's name or initials and any remarks as to reactions, and if second dose not given — why not?

(4) Age groups to receive vaccine.

A combined parent consent and record card was printed by the Department and distributed to the City Health Department, all Health Units and secretary treasurers of municipalities not in Health Units throughout the Province. They in turn

distributed them to every school in the province where medical services were available. Our intention was to give every child in the eligible age groups the opportunity of receiving vaccine if his parents would give their written consent and the medical services could be arranged. Local Government Districts were looked after by the Department and part-time Medical Officers of Health.

The present program is almost completed and by the middle of July about 55,000 will have received vaccine and all but a few hundred will have received two doses. These few hundred will get second doses when more vaccine is available. In these 55,000 are included the group who took part in the Field Trials in 1954. Those who had vaccine in the trial have been given booster doses and those who received only placebo have been given two doses of vaccine (in all cases—if the parents gave written consent).

possible and submitted promptly to the Provincial Laboratory in the Medical College. A brief case history and polio vaccine history should be submitted with the specimens. A second blood specimen must be submitted two to three weeks after the first, as it may show a rising titre. Blood specimens must be taken in ordinary keidel tubes or all glass syringes, vacutainers are not satisfactory for this purpose as the rubber cork has a definite effect on the specimen insofar as culturing etc., for polio virus. A case of "paralytic polio" has been defined as that showing the usual clinical signs and symptoms of poliomyelitis plus muscular weakness proven by examination and lasting more than 24 hours. **Report** every case **promptly** so that early investigation may be made by the Department.

Record cards of those who received vaccine are being kept on file in the City of Winnipeg Health Department, all the Health Units in the province

POLIOMYELITIS IMMUNIZATION RECORD

Name_____ Sex_____ School_____

Address_____ Birth date_____
Month Day Year

Municipality_____ Parent's Name_____

This is to certify that I wish my child_____
to be immunized against poliomyelitis, and to have the immunization reinforced as necessary.

_____
Signature of Parent or Legal Guardian

Date_____

Has child had poliomyelitis?_____ If "yes", state year of attack_____

Inoculation Date	Lot No.	Physician	Remarks
1st			
2nd			
3rd			

HPW-t-37

Very few children showed any reaction, local or general, to the vaccine—less than is usual after other inoculations. Some developed influenza, chickenpox, measles or mumps coincidental to the vaccination but these diseases were fairly prevalent at the time. Dr. E. H. Lossing, Chief, Epidemiology Division, Department of National Health and Welfare, writing to me on June 15th states "To date no report has been received from anywhere in Canada of poliomyelitis occurring subsequent to vaccination". Long may this continue, but if polio becomes epidemic anywhere in Canada this year, there will almost certainly be some cases in vaccinated persons.

In order that we may learn more about the disease and the value of the vaccine it is proposed that every **polio case with paralysis** in the 2 - 12 year age group be studied carefully whether he has had vaccine or not. Specimens of blood and stool should be taken as early in the disease as

and for the balance of the province at the office of the Department of Health and Public Welfare, 320 Sherbrook Street, Winnipeg. In this way the Department can easily check whether a case has had vaccine or not — how many doses, etc. (Anyone wishing a small supply of these cards for persons given commercial vaccine may obtain them by writing to the Department.)

What of the future? If all goes well we hope by June 1956 to have received sufficient vaccine to take care of another 109,000 plus booster doses to those vaccinated this year. This should take care of the remainder in the 5 - 12 year group, and perhaps even the 13 and 14 year group. Then as more vaccine is available there is the 6 months to 4 year group and over 14 years.

Our poliomyelitis vaccine clinics started in April, and in spite of wet weather and bad roads attendance was surprisingly good. Then, at the second clinic in May, although frightening reports

were coming from south of the border, the confidence of the people was not shaken excepting in a very small number, and in June our clinics had gained full momentum and the only thing stopping us was lack of vaccine! Today I venture to say that 99% of children in Manitoba offered Salk vaccine would receive their parents' consent to take it.

It would not be fair to conclude this report without expressing appreciation to Dr. Jonas E. Salk for his discovery of the vaccine, to the National Foundation for Infantile Paralysis for their backing of the Field Trials and making vaccine available in quantity, to Connaught Medical Research Laboratories for developing medium 199 and producing a safe vaccine for use on Canada, and also to the thousands of municipal secretary-treasurers, school teachers, doctors, nurses, bus drivers, express men, etc., and my own staff who through their joint efforts made it possible to carry out the program to date in a very successful manner.

Children's Hospital
Winnipeg, Man.

Re: Ward Rounds and Clinical Conferences

Grand Rounds will commence at Children's Hospital on Thursday, September 15th, 1955, at 11.00 a.m. to 12.00 noon, in the Playroom. These Rounds will be held weekly throughout the teaching season.

Clinical Conferences will be held on the 1st, 2nd and 3rd Tuesday from 12.00 noon to 1.00 p.m.

1st Tuesday — Clinical Therapeutic Conference, Professor Nickerson.

2nd Tuesday — Clinical Radiological Conference, Dr. A. Childe.

3rd Tuesday — Congenital Cardiac Clinic, Professor C. C. Ferguson.

The members of the Medical prefession are invited to attend these Conferences and Ward Rounds.

Department of Health and Public Welfare

Comparisons Communicable Diseases — Manitoba (Whites and Indians)

DISEASES	1955 July 17 to Aug. 13,'55	1955 June 19 to July 16,'55	1954 July 11 to Aug. 7,'54	1954 June 13 to July 10,'54	Total Jan. 1st to Aug. 13,'55	Total Jan. 1 to Aug. 7,'54
Anterior Poliomyelitis	6	2	42	9	11	92
Chickenpox	37	75	49	110	878	1238
Diphtheria	0	0	0	0	1	0
Diarrhoea and Enteritis, under 1 year	17	13	17	12	47	120
Diphtheria Carriers	0	0	0	0	2	0
Dysentery—Amoebic	0	0	0	0	0	0
Dysentery—Bacillary	2	1	3	0	8	17
Dysentery—Bacillary Carrier	0	0	0	1	0	1
Erysipelas	0	0	1	1	7	19
Encephalitis	0	0	1	0	0	1
Influenza	28	48	4	5	174	70
Measles	54	88	40	71	2020	771
Measles—German	0	4	2	0	58	14
Meningococcal Meningitis	1	1	1	4	11	14
Mumps	47	61	28	56	888	895
Ophthalmia Neonatorum	0	0	0	0	1	0
Puerperal Fever	0	0	0	0	0	0
Scarlet Fever	7	16	18	27	124	395
Septic Sore Throat	3	1	1	0	16	40
Smallpox	0	0	0	0	0	0
Tetanus	0	0	2	0	0	2
Trachoma	0	0	0	0	0	0
Tuberculosis	57	60	83	82	332	511
Typhoid Fever	0	0	0	0	1	3
Typhoid Paratyphoid	0	0	0	0	0	0
Typhoid Carriers	0	0	0	0	0	0
Undulant Fever	0	4	0	2	5	7
Whooping Cough	38	81	7	0	459	49
Gonorrhoea	97	109	123	98	667	808
Syphilis	4	7	7	6	67	64
Jaundice Infectious	24	23	11	20	198	246
Tularemia	0	2	0	0	2	2

Four-Week Period July 17th to August 13th, 1955

DISEASES (White Cases Only)	*828,000 Manitoba	*861,000 Saskatchewan	*2,825,000 Ontario	*2,952,000 Minnesota
Anterior Poliomyelitis	6	18	36	140
Chickenpox	37	7	227	....
Diarrhoea and Enteritis, under 1 yr.	17	19	....	....
Diphtheria	....	2	1	4
Diphtheria Carriers	....	....	....	....
Dysentery—Amoebic	....	....	....	4
Dysentery—Bacillary	2	4	7	4
Encephalitis Infectious	....	....	1	....
Erysipelas	....	....	3	....
Influenza	28	1	7	3
Jaundice Infectious	24	32	34	62
Measles	54	9	533	66
German Measles	....	....	125	....
Meningitis Meningococcus	1	4	5	2
Mumps	47	1	297	....
Ophthal. Neonat.	....	....	....	....
Puerperal Fever	....	....	....	....
Scarlet Fever	7	2	38	13
Septic Sore Throat	3	11	35	35
Smallpox	....	....	....	....
Tetanus	....	....	....	....
Trachoma	....	....	....	....
Trichinosis	....	....	1	1
Tuberculosis	57	58	70	106
Tularemia	....	7	....	....
Typhoid Fever	....	3	13	1
Typh. Para. typhoid	....	2	....	....
Typhoid Carrier	....	....	....	....
Undulant Fever	....	1	2	7
Whooping Cough	38	82	233	29
Gonorrhoea	97	....	178	....
Syphilis	4	....	50	....

*Approximate population.

DEATHS FROM REPORTABLE DISEASES

July, 1955

Urban—Cancer, 45; Pneumonia (other forms), 13; Puerperal Septicaemia, 1; Syphilis, 2; Tuberculosis, 1; Septicaemia and Pyaemia, 1; Diarrhoea and Enteritis, 2. Other deaths under 1 year, 26. Other deaths over 1 year, 196. Stillbirths, 22. Total, 309.

Rural—Cancer, 32; Influenza, 2; Measles, 1; Pneumonia, Lobar, 1; Pneumonia (other forms), 12; Tuberculosis ,1; Diarrhoea and Enteritis, 4. Other deaths under 1 year, 15. Other deaths over 1 year, 155. Stillbirths, 7. Total, 230.

Indians — Tuberculosis, 1; Other diseases attributable to Viruses, 1. Other deaths under 1 year, 0. Other deaths over 1 year, 4. Stillbirths, 0. Total, 6.

◆

Anterior Poliomyelitis — At date of writing (August 30th) only 18 cases have been reported and none of these in children who have received Salk vaccine. Only seven are reported with paralysis, eleven without, so it may be that some are not poliomyelitis. In non-epidemic years a greater proportion of cases reported do have paralysis. We expect our next shipment of Salk vaccine in January, 1956.

Other communicable diseases, excepting Whooping Cough, are at remarkably low levels.

Detailmen's Directory

Representing Review Advertisers in this issue, whose names are not listed under a business address.

Ayerst, McKenna and Harrison
W. R. Card — 40-7115
C. G. Savage — SU3-4558
R. A. E. Perrin — 42-4703
Jack R. Ostrow — 52-3242

British Drug Houses
F. J. Burke — 44-4991
W. B. Pipes — 42-2023
W. S. Langdon — 43-1325

Ciba Company Ltd.
Leslie D. MacLean — 6-1242
Ralph L. Whitfield — 43-0163

Connaught Laboratories
Brathwaites Ltd. — 92-2635

Frosst, Chas. E.
W. M. Lougheed — 40-3963
W. J. McGurran — 20-8231
E. R. Mitchell — 40-2132

Horner, Frank W. Limited
Richard Briggs — 43-0431
Jos. Lavitt — 59-1691
Linc. Sveinson — 43-0072

Mead Johnson
Robert Henderson — 42-6947

Merck & Co.
W. G. Ball — 4-5702

Merrell Co., The Wm. S.
F. G. Granger — 83-2811

Ortho Pharmaceutical Corp.
G. H. Hofer — 42-3000

Park, Davis & Co.
L. W. Curry — 40-1138
B. S. Fleury — 40-4441

Pfizer Canada
E. E. Conway — 6-4274
Paul Thurston — ED1-1834

Poulenc Limited
W. J. Plumpton — 4-5561

A. H. Robins (Canada) Ltd.
Norman Haldane — 72-5961

Sandoz Pharmaceuticals Ltd.
H. D. Robins — SU3-9936

Schering Corp. Ltd.
Halsey Park — 40-4346

Schmid, Julius
W. H. Davis — 20-6941

G. D. Searle & Co.
Harry Chambers — 50-6558

Shuttleworth, E. B.
S. M. Fairclough — 3-0158

Squibb & Son, E. R.
J. H. Don MacArthur — 40-4741
M. G. Waddell — 4-1552

Will, Chas. R.
A. C. Payne — 83-2055

Winthrop-Stearns
R. M. Kelly — 40-6459
Russell B. Ferguson — 4-9437

Wyeth & Bro., John
A. W. Cumming — 40-5694
Stuart Holmes — 23-5523